THE

JOURNAL OF GAS LIGHTING.

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XV. No. 346—18th YEAR.] LONDON, JANUARY 23, 1866. [Subscription per Ann. { 15s. in Advance / 18s. Credit.] Price 8d. Unstamped.

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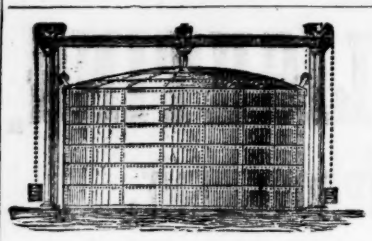

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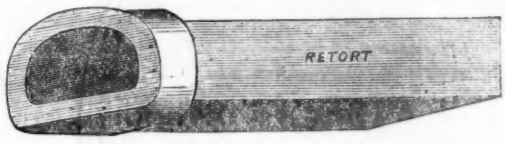

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TO CORPORATIONS, GAS ENGINEERS, AND OTHERS.

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ANOTHER

MEDAL AWARDED BY THE JURY, INTERNATIONAL EXHIBITION,

1862,

To THOMAS GLOVER,

SUFFOLK STREET, CLERKENWELL GREEN, LONDON.

THOMAS GLOVER has great pleasure in informing Gas Companies and his other Patrons, that the *Jury of Class XXXI. of the International Exhibition of* 1862 have awarded, for his Patent Dry Gas-Meter, *a Prize Medal.* The reason given for this Award, in the Juries Official Report, is, *"For excellence of manufacture, as regards Dry Meters."* See Official Report, p. 346.

It is worthy of remark, that the only two other Firms who receive Awards *both manufacture imitations of Thomas Glover's* Patent Dry Gas-Meter, and the reason given for these Awards is *"construction* and sound workmanship." Thomas Glover, therefore, claims that the *construction* of his Meter has obtained *three Awards from the Jury of the International Exhibition of* 1862; at the same time, *contrasting* the Award granted for his Meter by the words, *"For excellence of manufacture, as regards Dry-Meters."*

The Prize Meter was exhibited in Class XXXI., No. 6301, connected with a 1-foot holder, to demonstrate that a 50-light Meter *measures and indicates accurately the small quantity of One Foot.*

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(SUCCESSORS TO SAMUEL CROSLEY),

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Established 1816.

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Which can be seen at all the London Gas-Works. Also Liverpool, Manchester, Sheffield, Nottingham, Belfast, Glasgow, Birmingham, Dublin, Bristol, Leeds, Leicester, Brighton, Southampton, Sunderland, Wolverhampton, Bradford, Norwich, &c., &c.

TEST GASHOLDERS, EXPERIMENTAL METERS, EXHAUSTER REGULATORS,

MINUTE CLOCKS, PRESSURE GAUGES, PHOTOMETERS, PRESSURE REGISTERS, &c.

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NOTICES.

Subscribers who have not paid their subscriptions for the year 1865, or for any previous years, are requested to remit the same forthwith in the manner indicated below, in order to prevent any interruption in the regular delivery of the JOURNAL; and such subscribers as desire to avail themselves of the reduction in the subscription by paying in advance, must do so in the course of the month of January.

The subscription is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders must be made payable at the Charing-Cross Money-Order Office, to William H. Bennett, No. 42, Parliament Street, Westminster.

The next number will be published on Tuesday, February 6, and the subsequent numbers on each successive alternate Tuesday.

This JOURNAL has been duly registered at the General Post Office for transmission abroad.

Stamped copies, when forwarded by post, must be folded so as to expose the stamp; they are otherwise liable to the full postage charge for letters.

All Communications to be addressed to the Editor, No. 42, Parliament Street, Westminster; and orders for Advertisements to the Publisher, Mr. W. B. King, No. 11, Bolt Court, Fleet Street.

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, JANUARY 23, 1866.

Notes upon Passing Events.

THE discussion on the relief which ought to be afforded to casual paupers at night has received a curious illustration from a bit of evidence which casts completely into the shade all the official statements of poor law inspectors, poor law guardians, and their officers, and gives quite a new aspect to the subject. The daily papers, from the *Times* to the *Telegraph*, have been obliged to notice and admire a series of reports, from an eye-witness, in the *Pall Mall Gazette*, which that parochial organ, the *Observer*, at first affected to pooh-pooh! A gentleman and practised writer, with an excellent memory, and familiarity with ordinary Cockney slang, having had the courage to pass a night in the workhouse with the homeless wretches taken in at nightfall, has described, in language of evident fidelity, scenes not to be equalled for the dramatic interest they create in the readers by any work of fiction. The attempts to treat the writer's experiences as exceptional are utterly contradicted by the fact that the ruffians who talked were thoroughly at home, and astonished by nothing except the allowance of gruel! The nakedness, the cold, and the amusements, were all familiar to them. Although so much has been written on the text of this Lambeth night scene, we will venture to draw some conclusions from the facts so unexpectedly laid bare:—First, that the legislating authorities had no idea of to what horrors the decent and destitute are exposed. Second, that relaxations in the way of diet—the six ounces of bread and pint of gruel—were never intended for wretches fresh from or about to re-qualify for gaol, as an inducement to spend their last farthing in debauchery, certain of a hearty welcome at the "Swearing Club," with parish shelter and parish allowance. Third, that these refugees should be under the direct and habitual supervision of the police. An experienced officer would be well employed in assisting the good-natured "Daddy" by his discriminating presence; and it could not fail to be useful if once or twice during the night a policeman were to take the casual wards in his rounds, and cast his lantern's light on the mob of sleepers, or those who should be sleepers. Some impediments should be put in the way of flagrant abuse of charity, and some attempt made to secure order and outward decency. Since penning these lines, we observe that one parish has with good effect obtained the assistance of the police at their casual ward, and that the plan has received the official sanction of the Poor Law Board. The only instance on record of devotion to truth equal to that of the *Pall Mall* reporter was the voyage, as a third-class passenger, to America made by Mr. Darcy, an Irish gentleman of good family, in order to obtain materials for a reform in the management of emigration ships. But, although Mr. Darcy could suffer and did suffer the agonies of a voyage in the unutterable foulness of an emigrant sailing ship, he had no picturesque power of description. Hence he was considered by his friends and official people rather a bore, when he deserved to be ranked as a martyr. But he did great good for all that.

The Peabody model lodging-houses, which adorn or will shortly adorn and benefit Spitalfields, Islington, Shadwell, Chelsea, and Bermondsey, are an example of a form of architectural monument which is likely to be much employed by wealthy philanthropists. The Mediæval notion was an almshouse, but almshouses are out of date. Greenwich Hospital is being emptied, and left with a small band of the very infirm and friendless. Many of the well-endowed cottages of the Grocers and Goldsmiths remain empty, the objects of the bounty preferring poverty with their friends in crowds to a guinea a week and a Gothic villa in a dull suburb. Some unfortunate actors have consented to be transported to the wilds of Woking Common, but the really elegant houses provided by the Guild of Literature on Sir Bulwer Lytton's estate remain empty for want of a supply of poor authors; and the Farmers Benevolent Association wisely decided to spend no money on bricks and mortar, but devote their funds to pensions. Lodging-houses like those erected with Mr. Peabody's magnificent gift supply an urgent want in crowded cities—a

want which mere investors for good interest are not likely to supply. No monuments will speak more loudly to posterity than such hives for the industrious bees, if architectural grace be not wanting. We are glad to see that the committee who have done the work of the Peabody fund so economically have not destroyed the benefit of their well-built, well-ventilated chambers, with all the advantages of gas, water, wash-houses, and playgrounds for the children, by over regulation. Labouring people, who pay their rent and do not annoy their neighbours, are not worried by impertinent interference. Some years ago the Corporation of Liverpool built a magnificent sailors home, but the inmates were so manacled by rules, that few of the class who most needed its protection cared to lodge there, and the inmates were chiefly boys and old men. An hotel or club, where prayers morning and evening were the rule, and the doors inexorably closed at ten o'clock at night, would not meet with many customers or subscribers.

Attention has recently been called to the prevalence of scurvy amongst merchant seamen while it has been eradicated from the navy. The cause appears to be twofold—the neglect of the use of pure lime-juice and preserved potatoes to counteract the effect of salt provisions; and the continuous manner in which sailors renew their engagements for long voyages without waiting sufficiently long on shore to get the salt out of their bodies. With a certain class, a long voyage, a week of drinking, and another long voyage, are the rule. The only remedy will be to place merchant ships under the rules as to provisions of emigrant ships, and to charge the expense of curing scurvy-affected sailors to the owners. The machinery is in existence. Let the health of every ship's crew landing in a British port be the subject of a return from the captain. We cannot afford to lose sailors by unnecessary disease. It would be well if, with respect to women, the sailor-haunted districts of London, Liverpool, Hull, Newcastle, &c., were placed under the special law lately applied to garrison towns.

The Metropolitan Board is evidently determined to spare no effort to increase its power and revenues. The last example of this activity is found in a pamphlet, or rather report, of a semi-official character by Mr. Bateman, C.E., on "The Water "Supply of the Metropolis." In this report Mr. Bateman, evidently "inspired," to use a French term, by active members or zealous officials of the Metropolitan Board, proposes that the Board shall buy up all the existing water-works, and, after opening an entirely new source of supply, discontinue the use of the Thames water and make a surplus income out of the water-rates of the metropolis. The following is a statement of the case of Mr. Bateman's clients impartially digested from his able and elaborate pamphlet. It is not at present necessary to discuss the advantages or disadvantages of changing the present system. London is supplied by eight different water companies, who jointly pour in about 100 million gallons of water, of which about one half are taken from the Thames and the other half from the river Lea, from deep wells on the easterly and northerly sides of London, and from the river Ravensbourne on the south. The average supply is 30 gallons per head per day. At that rate, if the population continue to increase as it has hitherto increased, the daily supply in twenty years would be at the rate of 150 million gallons, and, as people every year seem to bathe, wash, and otherwise use more water, Mr. Bateman thinks it possible that 20 million more gallons in addition will not be sufficient to fill the demand. The rate of increase of water consumed in the metropolis is astonishing—

In 1850	44,383,332	gallons daily.
„ 1856	81,000,000	„ „
„ 1865	108,000,000	„ „

Since 1852, the water companies have expended nearly £4,000,000 sterling in the extension of their works, and up to the present time have satisfactorily met the demand. The maximum quantity the companies are permitted to draw under Act of Parliament from the Thames daily is 100 million gallons. The average daily abstraction does not exceed 60 million gallons, but there are days when they draw 80 million gallons. Mr. Bateman asserts that the volume of the Thames has diminished of late years, and that there is no adequate source to which existing companies can resort for a further supply. He then lays it down as a principle that the supplies of large towns should be sought in mountain districts where the largest amount of rain falls, where there is little or no population, where manured lands scarcely exist, and where copious springs are constantly supplying the purest and softest water. "Such sources," he adds, "are not too distant from London to prevent their being "economically applied, *although cost in this essential element "of healthful existence ought to be a matter of secondary consi-"deration.*" Having arrived at this point, Mr. Bateman points out, as most suitable for obtaining the required quantity of unexceptionable water, "the district lying on the flanks of "the mountain ranges of Cader Idris and Plynlimmon, in "North Wales, forming the upper basin of the main tribu-"taries of the river Severn." Mr. Bateman puts the annual rainfall on the drainage-ground he proposes for London at 36 inches, "probably not half the gross amount of rainfall." For his purposes he has selected two districts, each capable of supplying, in addition to the natural volume of the streams in dry weather, more than 100 million gallons of water per day. One of these districts, 66,000 acres in area, is situated a little to the east of the range of mountains of which Cader Idris and Aran Mowddy are the highest summits, respectively 2914 feet and 2970 feet in height. The other district, of about equal area, is situated immediately on the east of Plynlimmon, 2500 feet in height. The discharge-pipes of the lowest reservoir in each of these districts will be placed 450 feet above the level of Trinity high-water mark. The water will be conducted by separate aqueducts to a point of junction for over twenty miles, and then by a common aqueduct, 152 miles in length, near Bridgnorth, Stourbridge, Bromsgrove, Henley-in-Arden, Warwick, Banbury, Buckingham, Aylesbury, Watford, conducted to the high land near Stanmore, where service-reservoirs 250 feet above high-water mark are to be constructed. From these it is proposed to deliver to the City, at "high pressure," and under "the constant supply system." One of the mountain reservoirs will, by an embankment 76 feet in height, form a lake five miles in length; another, by an embankment 80 feet in height, a lake four miles in length; and out of the several reservoirs, four of which are mentioned, one will contain 150 per cent. more available water than Loch Katrine. Mr. Bateman estimates the total cost of his scheme, including service-reservoirs, with ten days supply of 200 million gallons, at £8,600,000; and the total cost, after purchasing the interest of the London companies, at 25 years purchase on their revenues, he estimates at under 20 millions sterling for 120 million gallons a day, and a little over 22 millions for a supply of 220 million gallons. Mr. Bateman puts down the annual expenses, including interest at £4 per cent. on the money borrowed for the execution of the works and working expenses at £944,000. On this he hopes to save, by a reduction of the interest on the capital, through Government guarantee, from £85,000 to £116,000 a year. His income from property purchased and rates he calculates at £950,000 a year. Were these estimates realized, the Metropolitan Board would be in possession of an increasing revenue. But the scheme is too large to be hastily analyzed, and we shall take an early opportunity of returning to the subject; our outline, however, will give those interested in the subject some idea of Mr. Bateman's design and the Metropolitan Board's ambition.

The Common Council of London have had the courage to put very natural private feelings on one side in the matter of the Holburn Viaduct. On the report of the committee asking for additional professional assistance to carry out Mr. Cubitt's views, being brought up, on Thursday last, an amendment for placing the completion of the work he had initiated in Mr. W. Haywood's hands, was carried by an overwhelming majority. The chairman of the committee seems to have gracefully submitted to the opinion of the majority. Mr. Haywood was not only supported by the report of Mr. Cubitt, but by the offer of an eminent contractor to execute the work for £149,500 less than the lowest tender for the City architect's design. The decision will raise the character of the Corporation for independence and public spirit, release the City architect from a most embarrassing position, and enable Mr. Haywood to achieve a very laudable object of ambition—a great work of public utility in his native city. One curious argument, singularly characteristic of a certain class of minds, was used by an alderman. After it had been unanimously admitted that Mr. Haywood's design was admirably adapted for the purpose, that it was cheaper than that of the City architect by the enormous sum above named, and that, having "spent all his life in City "works, knowing every old and new house, every flagstone, "every gradient, and all the details of traffic," he must be the best qualified man to carry the work out, Mr. Alderman

Besley objected to the resolution, because it would make Mr. Haywood the master instead of the servant of the committee.

The utterly unexpected violent snowstorm has brought all the municipal and parochial authorities of London into great disgrace. A natural but not altogether reasonable clamour has been raised, because the inhabitants, and especially the daily visitors of the metropolis, were very much inconvenienced by the mixture of snow, slush, and mud for two days. The weak point of our organization for cleaning purposes is the contracting system, which is adopted in order that rates may not become altogether unendurable. The model system, supposing expense were of no moment, would be an organized army of able-bodied labourers in convenient bands, apportioned to manageable districts—in fact, the street-orderly system, with proper machines and implements, and an unlimited supply of water. With this organization all the streets, except those crowded with traffic, might be kept nearly as clean as Leamington or the main streets of Paris. The expense would be a serious addition to the rates, and even this costly army would not avail in case of a snowstorm, because that would require ten times the number of men and carts that it would be possible to keep employed in average weather. To keep down expenses, contracts are made which answer moderately well in average weathern—infinitely better than the attempts at street-cleaning by worn-out paupers under the superintendence of cheap officials. Do what they will, the authorities of the metropolis, with its enormous traffic, coal-smoke, damp climate, and natural clay soil, cannot maintain the neat appearance of a city of pleasure on such a soil as that where Paris stands. The great fault of our street rulers seems to be a want of preparation for such an emergency as a snowstorm. We do not have heavy snow every year, and when it comes it seems always to take us by surprise. The only practicable remedy is to provide a set of regulations, especially directed to our principal thoroughfares, to be circulated with the tax-papers every November, wet or fine, and carried out by the police, because they perambulate every street. No contractor in London could find a thousand men at an hour or day's notice fit to be trusted with spades; but if every householder, between Hyde Park Corner on one side and the Marble Arch on the other and the Bank, was warned at the commencement of every winter season, that he must be answerable for keeping the pavement opposite his premises clear of snow, under a penalty, and the police were duly authorized to carry the order out, with such details as may be suggested by the chief surveyors of the Metropolitan Board, at any rate the footpaths would be kept clear. As to the roads, in the first emergency, we must be content with attention to the gratings of the sewers. To cart away all the snow that fell in London on that memorable Thursday night and Friday morning, within a few hours, would have puzzled all the dust contractors, with all their carts, for twenty miles round. The snow that fell in the streets of the City of London alone, without counting what fell on the houses, amounted to 100,000 cart-loads, each cart requiring three horses in such weather, and with the necessity of travelling at least three miles. To discharge snow into the Thames is forbidden by Act of Parliament.

The movement for establishing middle-class schools in London has called attention to the numerous useless charities, of insignificant amount, existing in the City. Would not it be possible to have, for a limited period, an open court on the principle of the Encumbered Estates Court, for dealing with buried investments and wasted incomes under a certain value. It is quite certain now that Bunhill Fields will not be sold on building leases. Cannot an arrangement be made for throwing it open, as an "open pleasure-ground," to the crowds of children of the neighbourhood, and, at the same time, giving due prominence to the venerable and illustrious dead who lie buried there. There could be no better or more sacred use for the many disused burial-grounds of the City of London than to concrete them over, and turn them into playgrounds.

Mr. Fowler's address as President of the Institution of Civil Engineers, has created a sensation far beyond the profession. A man of the world as well as an eminent engineer, he has done good service by showing so plainly that, in these days, although no man can become a great engineer without book learning, all the book learning in the world will not make him a chief in what is essentially a practical and technical as well as a learned profession, and that tenacity and self-confidence are as important as theoretical knowledge.

Circular to Gas Companies.

The peculiar arrangement between Mr. Taunton and the authorities of Kingston-upon-Thames for virtually defeating the objects of the Sales of Gas Act—to which we directed attention three years ago—has culminated at last in a course of proceeding so flagrant that one of the parties has been convicted. It may be remembered that Mr. Taunton, who had been the meter inspector for the City of London, was appointed in June, 1862, by the Kingston Corporation, the inspector and tester of meters in that borough, on the conditions that he should provide the office and all the requisite apparatus, be responsible for all the penalties imposed by the Act, and receive for his remuneration the amount of all the fees in lieu of a fixed salary. The office he opened was situated on the London road, at the extreme eastern boundary of the borough; and it was apparent, if not avowed, that Mr. Taunton's object was not to test and stamp the meters required in Kingston, but those sent to him by certain manufacturers in London. What could have induced the Corporation of Kingston to lend themselves to such an arrangement did not appear; but it was evident that they were made the cat's-paw for the establishment of a meter-stamping shop for the individual gain of Mr. Taunton, and the convenience of one or two meter-makers in London, in direct contravention of the principle of the Sales of Gas Act, that the inspectors should be entirely independent of the manufacturers. Mr. Thomas and Mr. George Glover were the chief customers of Mr. Taunton, and with their patronage he contrived to carry on a lucrative business, to the prejudice of the Metropolitan Board of Works, whose inspectors were consequently deprived of so much work. The Board attempted to protect themselves by urging the Home Office to bring a Bill into Parliament to amend the Sales of Gas Act, by requiring all meters to be stamped by the inspectors of the district in which they were made; but that Bill was ultimately withdrawn, principally in consequence of the representations of several corporate authorities of towns in which inspectors had been appointed, on the ground that their officers would be deprived of a large portion of their fees were the places for the stamping of meters so limited. The Board continued to witness the perversion of the Act, if not with patience, at least without active interference; but in June last a new and bolder inroad was made into their province, which was beyond their power of endurance. To avoid the expense of carrying the meters so far as Kingston, Mr. Taunton opened an office in Camberwell, to which he transferred the testing apparatus, and stamped meters there with the Kingston stamp; the Messrs. Glover continuing to be his best if not his only customers. This was so direct a violation not only of the spirit but of the letter of the law, that the Metropolitan Board determined to put a stop to it. Summonses were obtained against Mr. Taunton for stamping meters beyond the bounds of his jurisdiction, and against Mr. Thomas Glover for fixing meters that had been illegally stamped. The cases were heard at the Lambeth Police Court, and a full report of the proceedings will be found in another part of our present number. It was contended, on behalf of Mr. Taunton, that in virtue of his appointment as meter inspector for the borough of Kingston-upon-Thames he was authorized to stamp meters in any part of the kingdom, and his counsel adduced the fact that meters are sent from London to Edinburgh and other places to be stamped to support that opinion. The cases are, however, very different. The offence alleged against Mr. Taunton was, that he had gone out of his district to stamp meters, and that in so doing he had acted illegally; in the other cases inspectors acting within their own districts stamp the meters brought to them. Mr. T. Glover put in the plea, on behalf of the defendant, that he tested meters much more accurately than other inspectors, and said that was his reason for sending his meters to Kingston and afterwards to Camberwell. It seems, indeed, from his assertions, that the reputation of his meters depends much on the accuracy with which they have been tested by Mr. Taunton, to whom he had paid in fees, in one year, not less than £590. The magistrate, however, did not appear to think that circumstance was likely to impart increased confidence, for he said it was exceedingly suspicious for a person to go out of his district into another where an inspector had been already appointed. The defendant was convicted, and the penalty of £5, prescribed by the Act, was imposed.

The summons against Mr. Thomas Glover was dismissed on

a technical objection; for it could not be proved that he had "fixed for use" any meter not stamped according to the provisions of the Act; and the magistrate expressed the opinion that the seller of an unlawfully stamped meter is not liable to any penalty. The reasons he assigned for dismissing the summons may be questioned, and it is intended to take the opinion of a superior court on the subject; but, if the decision of Mr. Elliott be confirmed, the onus will be thrown on gas companies of proving that the meters they fix have been lawfully stamped; and any person fixing an unlawfully stamped meter is liable to a penalty of £5 for every offence. The Kingston stamp bears the number 45 below the V.R., but the inspector has also been in the habit of adding a stamp with the arms of the borough—three dolphins—upon it, encircled by the inscription, "Corporation Meter Inspector," which has led many persons to believe that the stamp was that of the Corporation of the City of London. It would be prudent in all purchasers of such meters to require a guarantee from the manufacturer that each one had been lawfully stamped; and, under the circumstances, it might be the safest course to have all meters bearing those stamps, restamped by another inspector. Mr. Glover, indeed, offered to pay the expense of restamping those sent to the office at Camberwell, should the decision of the magistrate be confirmed.

The Court of Queen's Bench pronounced a judgment, on the 17th inst., in the case of the Phœnix Gas Company and the parish of Lee, which will tend materially to settle, on a permanent basis, the principles on which the property of gas companies should be assessed. The case arose, as many of our readers will recollect, out of an appeal of the Phœnix Company against an assessment of £1213 on their mains in the parish of Lee, which appeal was heard at the West Kent Sessions in January last year, and was fully reported in our columns at the time. The Court of Quarter Sessions, of which Mr. Gathorne Hardy was chairman, reduced the assessment to £364, but granted the parish a case on the point whether meters, retorts, trade fixtures, and utensils should be considered to form part of the capital which, in such cases, the imaginary tenant is presumed to employ to carry on the works, and which, if considered as capital, could not be assessed. We have not yet received our report of the proceedings, but we are informed the judgment of the court was to the effect that meters—which in the case of the Phœnix Company were valued at £35,000—form part of the tenant's capital, as being chattels, and in no manner attached to the hereditaments which are rated; but that retorts, purifiers, exhausters, boilers, steam-engines, the moveable parts of gasholders, and the machinery in general are attached to the land, giving increased value to the hereditaments, and consequently form no part of the tenant's capital. The valuers on the part of parishes have uniformly denied that meters constitute a part of tenant's capital, and the judgment is to that extent greatly to the advantage of gas companies, as for the future their claim to interest and tenant's profits on the capital invested in meters cannot be successfully contested in the face of an express decision of the superior court in favour of the claim. On the other hand, the claim sometimes set up by the valuers on the part of gas companies for similar allowances on the capital invested in trade fixtures, becomes untenable and must be withdrawn. The law as to the rating of gas-works has been divested by this judgment of much of the doubt and difficulty that heretofore involved the question, and the few points that still remain doubtful ought not to give rise to litigation. They are such as may be settled by conferences between the valuers on both sides, who if they be reasonable men will now have little difficulty in agreeing about the fair rateable value.

That the warnings we have from time to time given against the impolicy of fixing the standards of the illuminating power of gas so high that they can only be maintained by using cannel coal, either wholly or in part, were not premature, is proved by the advance that has recently taken place in the price of Boghead cannel. It has risen from 45s. per ton at Leith to 68s., and to 70s. when required in small quantities. Most of the other cannels have also risen in price, and though more gradually, yet in a higher proportion than the advance in other coals. If 16 or 18 candle gas is to be supplied, the price of cannel may be expected to rise still more rapidly.

Mr. George Flintoff, after enjoying his ease in retirement for some time, has come forth again like a giant refreshed. The balmy air of Dorsetshire appears to agree with him, and his stentorian voice has resounded in the town-halls of Dorchester and Weymouth with full force. It is a new scene for his operations, and he always succeeds best where he is least known, thus bearing out the aphorism that a prophet has no honour in his own country. There was nothing new, however, in his lectures in those towns. Judging from the reports of them in the local papers, they were repetitions *mutatis mutandis* of the speeches with which he has enlightened the discontented gas consumers in all the other places that have been honoured by his presence. Plymouth is still his model town; the price of coal continues to make no difference in the cost of manufacturing gas; the meters have not ceased to cheat by false registrations; gas companies are as ignorant and dishonest as he has always found them, and persist in thinning the gas with atmospheric air; and there is no alteration in the plan of redressing all grievances by the formation of a consumers company, which, as heretofore represented, will be able to supply much better gas at a greatly reduced price, with large profits to the shareholders. At Weymouth, where the present price of gas is 5s. 6d. per 1000 feet, a resolution was passed to the effect that a new company should be formed, with a capital of £20,000, to supply 18-candle gas at 3s. 6d.; but at Dorchester it appears that the only resolution agreed to was a vote of thanks to the lecturer. If reliance is to be placed on what one of the speakers stated at the meeting in Weymouth of the ungracious reception of an application for a reduction in the price of gas—which was in some degree confirmed by a letter from the principal shareholder in the company—no desire has been shown to conciliate the gas consumers of that town; and Mr. Flintoff's representations, however absurd and exaggerated, may under such circumstances fan the flame of discontent, and produce consequences injurious to the interests of the gas company, which might be prevented by meeting all reasonable applications with liberality and courtesy.

The outcry against the alleged nuisance of gas-works in densely populated neighbourhoods has been taken up by the *Athenæum*, and that literary and would-be scientific journal has revived the absurdity of which the daily papers have become ashamed—that there is danger of the blowing up of Westminster Abbey and the Houses of Parliament by the explosion of the gasholders in the neighbourhood. The attention of Parliament is urgently called to the subject, and it is alleged that "a statement of the quantity of gas which is stored within "a circle having a quarter of a mile radius from the Abbey "and the Houses of Parliament will astonish and probably "terrify that legislative body." We hope our legislators are not so ignorant of the properties of gas as to be frightened from their propriety by the bugbear of exploding gasholders, which ought to be classed with the ghosts and hobgoblins of a bygone generation. It seems probable, however, that some attempt will be made during the ensuing session to remove gas-works from the crowded parts of the metropolis, and gas companies will do well to be prepared to meet such an attempt by proving that there is no possible danger from the proximity of gasholders, nor anything injurious to health in the processes of gas making.

A spirited correspondence is going on in the columns of the *Chemical News* between Dr. Letheby and Mr. Wood, who was lately the assistant of Dr. Letheby in his City laboratory, on the question of their competing claims to be the first suggestor of the use of soda waste for the removal of bisulphide of carbon from coal gas. The first printed notice of the efficiency of that material for the purpose appeared in our JOURNAL on the 31st of October last, founded on information received from Dr. Letheby; but it was published without any knowledge that it was the intention of Mr. Wood to make the process the subject of a patent, for which he applied on the following day. In all competing claims to discoveries and inventions it is extremely difficult to decide on the respective merits of the claimants, but in this case the explanation of Dr. Letheby shows that he at least pointed to the direction in which the inquiries should be conducted that led to the application of soda waste, and that he had previously suggested the use of that substance for the purification of gas. We insert the correspondence as far as it has proceeded that our readers may form their own opinions. It commences with a short letter from Mr. Wood referring to a passage in a letter of Dr. Letheby's on the subject of Professor Anderson's experiments on the removal of bisulphide of carbon. To Mr. Wood's com-

munication Dr. Letheby rejoined with the explanations we have alluded to.

To the Editor of the CHEMICAL NEWS.

Sir,—In the letter from Dr. Letheby which appears in your last issue, I find the following passage:—"Lastly, it has been ascertained in my own laboratory, that the sulphides and oxysulphides of lime in soda waste accomplish the object in a similar manner."

As Mr. Barret and myself have already claimed the use of soda waste in the purification of coal gas as our own invention, we should be glad to learn from Dr. Letheby when the experiments he refers to were made. I should not trouble you with this letter were it not that the use of this material has been already announced as a discovery of Dr. Letheby's, a statement the truth of which I wish to test.—I am, &c.,

Jan. 10, 1866. C. H. WOOD, F.C.S.

To the Editor of the CHEMICAL NEWS.

Sir,—I am glad to have the opportunity afforded by Mr. Wood's letter in the last number of the *Chemical News*, of speaking of the use of soda waste for the purification of coal gas; for although I am very unwilling to say anything about Mr. Wood's conduct in the matter, yet I am anxious that the facts concerning the proposed use of this substance should be known.

Mr. Wood had been for about two years (until Christmas last) an assistant in my laboratories, and during that time he had frequent opportunities of learning my views respecting the forms in which sulphur exists in coal gas, and the probably best means of extracting it. He has heard me again and again discuss the question of the use of alkaline sulphides as the most hopeful of all agents. He knew that we were prosecuting experiments at the gas-works at Nottingham with sulphide of ammonium (ammoniacal liquor), and that those experiments were becoming more and more successful. He examined with me the products of the combustion of the gas in all those inquiries, and he conducted for me experiments of a like nature in my City laboratory. He, therefore, knew exactly the direction in which my observations and inquiries were moving. Nay, more, although we were chiefly working with ammoniacal liquor, because it is the cheapest and most accessible of all such sulphides, yet we spoke of the use of other refuse sulphides or oxysulphides—as sulphide of calcium, or blue billy, and soda waste. I had even asked Mr. Young, of the Birmingham and Staffordshire Gas-Works, to get some of the soda waste from Messrs. Chance, of Birmingham, and to try it on a large scale at Saltley. To be candid, however, I did not, and even now do not, think much of the proposal; because, although there are places where soda waste is easily obtained, yet, as a rule, it will be found very difficult to convey such a noxious material to the gas-works and to remove it therefrom after it is exhausted. Nevertheless, I had entertained the question, and but for the pressure of work, and the experiments at Nottingham, I should have followed it out. Soon after this, however, I saw in my City laboratory specimens of soda waste, and it occurred to me that Mr. Wood might perhaps be pursuing the matter for me, he knowing how great an interest I took in the subject.

About six weeks or two months ago, Mr. Wood addressed me in these words: "About that soda waste, sir, that we were speaking of: I find it removes the sulphur from the gas, and reduces the quantity to about 7 grains in the 100 feet. I have been trying it with Mr. Harris, at the Great Central works, and it seems to be a success." I expressed my satisfaction at this, and said I had no doubt from the principle we had in view that it would be effective. He then told me that he thought of taking out a patent for it. I was very indignant at such a proposition, and told him then, as I tell him now, that he had no right, as my assistant, working in my laboratory, on a subject which I was especially investigating, to avail himself of my knowledge and to use it in such a manner. I said that I would not have it thought that I, who had been so loud in my complaints of the quantity of sulphur in the City gas, was in any way concerned with the taking out of a patent for the remedy; and that, as the process was developed in my laboratory, from the results of my own inquiries, I should at once disclose the fact, and advise the gas companies to use the process in the freest manner.

So much was I vexed by this conduct that, after consulting a few professional friends, I gave Mr. Wood notice to leave my service, for, I must confess, I had lost all confidence in him. Indeed, I put it to any one who has charge of a laboratory, where special inquiries are going on, whether any confidence could be reposed in an assistant who used the knowledge which he had thus acquired for such a purpose.

I trust I have not expressed myself at all harshly or improperly in my account of this delicate affair. I am, &c.,

H. LETHEBY.

College Laboratory, London Hospital, Jan. 15, 1866.

Dr. Letheby does not appear to think the process of much practical value; but, at all events, he deserves the thanks of gas companies for having thrown it open to the public by the publication in our columns; for the accumulation of crude and unworkable patents that often stand in the way of practical improvements has become a serious nuisance.

Correspondence.

PURIFIERS.

SIR,—Mr. Stephenson's suggestion, in your JOURNAL of the 26th ult., made me say, "I could a tale unfold." Many years ago, I had to endure the miseries of a purifier upon the outlet-main. I am not going to tell who placed it there, nor how long I had to bear with its misdeeds. It is an old story, but not easily forgotten. With the most careful management it was impossible to prevent foul gas from passing occasionally into the mains; whilst every time the purifier was cleansed there was not only the risk, but not unfrequently the actual occurrence, of lights (burning in the day-time) being put out half a mile distant from the works. Mr. Stephenson's proposed purifier is right in principle, but wrong in position. Let it be placed upon the inlets, instead of the outlets, of gasholders, and, being there, a preventive, a remedy will not be necessary.

The only effective means of insuring a continuous supply of pure gas is by what Mr. Croll describes, in the JOURNAL of the 9th inst., as "such a number of purifiers as will at all times be sufficient to purify the largest quantity of gas made." This appears to be all very plain. I wish it was better understood. No gas-work can be properly managed without such a provision of purifying power; and yet it is exactly the department in which many works are lamentably deficient. I hope and believe that these slight references to the subject will do good; all the more important at this period of the year in making arrangements for the season 1866-7.

Mr. Croll agrees with Mr. Stephenson as to the necessity for "a reserve purifier," but differently placed, and charged with lime instead of oxide.

Something more might be said about purification. The "number" of purifiers is important; but their size (area) is more important. The greater the surface, other circumstances being alike, the slower the movement of the gas. Are not these conditions most favourable to the economical performance of the purificatory process? Increasing the number of purifiers in series, or the tiers in the respective vessels, or the quantity of purifying material, is of comparatively little avail if the gas be driven too quickly. There is a limit of capability. If that be exceeded, the best intentions and greatest care are sure to be defeated; for the gas forcing for itself innumerable passages, the process will be more like mechanical infiltration than chemical combination. Is not this one of the causes of impure gas sometimes finding its way to gasholders and mains?

Jan. 16, 1866. * * * *

SIR,—Without wishing to enter into any controversy as to the advantage or otherwise of placing an additional purifier between the gasholder and the governor, as suggested by Mr. H. P. Stephenson, I may observe, that I agree with Mr. Croll in the conviction that a purifier in such a situation is likely to cause much greater inconvenience than benefit; and that with the exercise of that care and attention which ought to characterize the management of gas-works, the assumed necessity for such a purifier as that suggested by Mr. Stephenson ought never to exist.

My object in writing is, however, in reference to Mr. Croll's suggestion of an additional purifier to be charged with lime. The reason why lime should be used in this purifier, even when the others are charged with oxide of iron, Mr. Croll says will be understood by competent gas engineers.

He no doubt alludes to the fact that oxide of iron will not remove the carbonic acid which lime does.

Soon after we commenced to use oxide at the Salford Gas-Works I suggested the erection of two lime purifiers in connexion with each four of oxide. We were not able at the time to make the necessary arrangements; but about nine or ten months ago the alterations were carried out by our manager, Mr. Halls, and the gas now passes through three purifiers charged with oxide of iron and then through one purifier charged with lime.

The result has been very satisfactory, and I would strongly advise the adoption of this arrangement wherever oxide of iron is used. Indeed, without wishing to detract from other plans combining oxide and lime, I believe the combination of the two methods in this manner is the most simple and efficacious method of purifying yet known.

C. E. CAWLEY, M.I.C.E.,
Chairman of the Salford Corporation
Manchester, Jan. 18, 1866. Gas Committee.

Register of New Patents.

834.—JOHN BAILEY BROWN, of 36, St. Petersburgh Place, Bayswater, for "*Improvements in casks or vessels for storing petroleum and hydrocarbons.*" Provisional protection only obtained. Dated March 24, 1865.

For the purpose of this invention a compound cask or vessel is constructed, consisting of an interior cask or vessel of lead and an exterior cask or vessel of wood. It is preferred that the interior cask or vessel should be of a cylindrical or nearly cylindrical form for facility of manufacture. At each end of the cylinder or vessel of lead, a head or end of lead is fixed by soldering or otherwise, so as to be perfectly fluid and vapour tight. In one end or head there is formed a tubular opening to receive a screw-plug or cap which will close the opening fluid or vapour tight. This vessel or cask of lead is placed within, or protected by an exterior vessel or cask of wood, made in like manner to ordinary wood casks; but it is preferred to have as little bilge as may be, more particularly when the lead cask or vessel is made without bilge, or with very little bilge.

840.—VALENTINE BAKER, lieutenant-colonel of her Majesty's 10th Regiment of Hussars, of Cahair, in the co. of Tipperary, Ireland, for "*Improvements in obtaining motive-power, parts of which improvements are applicable to the compressing of air and gases.*" Provisional protection only obtained. Dated March 24, 1865.

This invention relates partly to an improved system or mode of supplying water to hydraulic motive-power engines, worked by a head-pressure, and consists in bringing the water from lakes, reservoirs, streams, or rivers, in elevated localities by means of syphon pipes of increasing strength in proportion to the depth of fall, and causing such water to operate upon suitable hydraulic-power engines situate at a lower level.

841.—GIACOMO FELICE MARCHISIO, of 50, Baker Street, London, gentleman, for "*Improvements in apparatus for obtaining light.*" Patent dated March 24, 1865.

This invention relates to a mode of obtaining light without danger of explosion by the use of air which has been rendered inflammable by admixture with the vapours of petroleum and other hydrocarbons. In all apparatus employed in this system of lighting it is necessary to use liquids of a highly volatile nature, which are liable to explode spontaneously with the smallest excess of heat. The peculiar apparatus which constitutes the essential feature of this invention is intended to obviate the danger and inconvenience above referred to. It consists of a circular chamber, in the interior or which rotates a drum, which receives its rotary motion from any convenient arrangement of mechanism outside the chamber. This chamber is half filled with water at its normal temperature, and upon this water is poured petroleum in a specially refined state, naphtha, or other hydrocarbon, so that the water and hydrocarbon together will fill about two-thirds of the capacity of the chamber. Whilst the drum is at rest, there is no danger of explosion, as the hydrocarbon will always be at the same temperature as the water, and when the apparatus is set in motion, the external air enters the chamber by an opening for that purpose, and passes into the interior of the drum, which is made hollow and provided with openings at the sides. The air is carried through the hydrocarbon by the rotation of the drum, and becomes impregnated with inflammable vapour, and by the same rotation of the drum it is discharged through other openings therein, and enters the supply-pipe of the burners. The hydrocarbon being constantly agitated and mixed with the water by the movement of the drum, all danger of explosion is obviated, as any undue elevation of the temperature is rendered impossible. As the regularity of the light depends upon that of the vapours of the hydrocarbon in contact with the air, and as this latter chemical phenomenon is produced by the latent heat of the said liquid, it may be reduced either by the constant evaporation or by the lowering of the temperature of the surrounding atmosphere; it is proposed in very cold weather to maintain the desired temperature by means of a small burner situated immediately beneath the chamber or outer casing, such burner being supplied by a branch pipe from the main pipe.

849.—Richard William Barnes, of Manchester, civil engineer, for "*Improved apparatus for ascertaining the state of sewers, tunnels, drifts, or other subterranean work, part of which apparatus is applicable to levelling purposes.*"—Provisional protection only obtained. Dated March 25, 1865.

This invention consists in the use and application of a lantern constructed with an outer and inner casing, so that the space between the two forms one or more chambers or passages for the requisite amount of air to support the flame of the lamp, which air is supplied through the top part or roof of the lantern; also in the adaptation of reflecting apparatus to such lamp, and to the employment of a staff or rod as a guide for directing the rays of light from the lantern in any desired direction, the object of the whole being to enable sewers, &c. to be examined without the persons conducting the inspection having to descend into such subterranean works or without having to be in close proximity thereto.

855.—William Clark, of 53, Chancery Lane, London, engineer, for "*Improvements in the manufacture or preparation of materials for, and in their application to, lighting and heating purposes; also in apparatus used for the same.*" A communication. Provisional protection only obtained. Dated March 25, 1865.

This invention relates to a means of supplying a combustible gas to consumers for lighting and heating purposes, which may be contained in very light receptacles relatively to the quantity of gas contained, and thus suitable for conveyance the longest distance at much less cost. The invention consists in the manufacture of gaseous products extracted by the ordinary methods from mineral, vegetable, and animal matters, either separately or combined in various proportions, and also in the condensation of the said gaseous products by the aid of pressure, so as to liquefy the one part and dissolve the other with those liquids in which the gases may be held in solution, so as to form an entirely new combustible matter, which is called by the inventor liquid gas.

876.—François Adolphe Mocquard, of 10, Rue de la Fidélité, Paris, for "*Certain improvements in gas-burners*" Patent dated March 28, 1865.

The form of the burner which is the subject of this patent may be varied, the principle of the improvement being, first, the application of a reservoir interposed between the burner-holder and the burner apparatus, permitting the gas to be dilated before its egress; and, second, the employment of certain arrangements for regulating the current of air, and increasing the surface of the flame.

879.—Henry Welchman King, of Torrington Square, London, lieutenant, Royal Naval Reserve, for "*Improvements in ventilating-blinds.*" Provisional protection only obtained. Dated March 28, 1865.

This invention consists in constructing blinds of a series of segments of tubes, pivoted at top and bottom upon stationary rods or bars, and connected near one end to studs upon a movable bar. The segmental plates, or portions of a tube, are placed so close to each other that even when in a position to allow of the passage of the greatest amount of air the blind cannot be seen through. The blind may be more or less closed, by causing the plates to move on their pivots by means of the movable bar.

897.—Benjamin Baugh, of Birmingham, manufacturer, for "*Improvements in the manufacture of reflectors for lamps, and of surfaces for reflecting light generally.*" Provisional protection only obtained. Dated March 30, 1865.

This invention consists in making reflectors for lamps, and for reflecting light generally, of iron or other metal, coated or covered with glass or enamel, and afterwards made capable of reflecting light, by first coating it with glass or enamel in the ordinary way, excepting that in addition to the materials ordinarily employed in making the glass or enamel, oxide of manganese, either with or without arsenious acid, or white arsenic, is employed. The addition of the oxide of manganese gives a purple colour to the glass or enamel, and the white arsenic gives an opacity. After the glass or enamel has been fused on the surface to be made reflecting, and has been allowed to cool, a solution of bichloride of platinum is applied by means of a brush, or in any other convenient manner. After the solution has dried, the article is subjected a second time to the heat of the enamelling muffle. By this treatment the bichloride of platinum is decomposed, and a brilliant reflecting surface of metallic platinum left on the part, or parts, to which the bichloride of platinum has been applied.

900.—Alexander Angus Croll, of Coleman Street, London, civil engineer, for *Improvements in the manufacture of sulphate of alumina.*" Patent dated March 30, 1865.

These improvements have for their object the obtaining of sulphate of alumina with increased rapidity, economy, and quantity, considered in relation to the quantity of clay or other aluminous base and of acid under operation, and the time employed in obtaining the results.

This invention consists in employing sulphuric acid (oil of vitriol) diluted to a limited extent with water and heated to a high degree of temperature to act upon the aluminous base. It is preferred to employ say five parts by weight of oil of vitriol sp. gr. 1·845, diluted with water to the sp. gr. of say 74 Twaddle and heated at about 220° Fahr., at which temperature the sp. gr. will show about 65 Twaddle. To this diluted acid is added about four parts by weight of thoroughly dry and finely divided clay rich in alumina, and which has been previously roasted. The temperature of the acid may be to some extent varied, and the proportions given may be also varied, dependent, in great measure, upon the quantity of alumina in the base operated upon. Heat may be applied to the aluminous base when using cold dilute acid, but it is preferred to apply the heat, as stated, to the acid. Sulphate of alumina thus obtained may be treated with carbonate of lime, as described in the specification of a former patent granted to the present patentee on the 30th of September, 1864 (No. 2407), in order to yield a cake of sulphate of alumina. Or if it be desired to obtain a cake free from silica, the solution may, when chemical action has ceased, be diluted so as to obtain the precipitation of the silica and undissolved clay which may be contained therein; and the solution remaining after such precipitation, when again concentrated by evaporation, may be treated with carbonate of lime, and yield a good solid cake of sulphate of alumina. Or if it be desired to obtain a sulphate of alumina free from insoluble matter, the above clear liquor, when sufficiently concentrated, may be allowed to cool to yield the cake required; or the sulphate of alumina obtained by this means may be used in the manufacture of alum.

905.—John Pinchbeck, of Lower Katesgrove House, Reading, civil engineer, for "*An improvement in engines worked by heated air or gases.*" Provisional protection only obtained. Dated March 31, 1865.

The object of these improvements is to effect greater economy and to increase the power obtained from engines in which atmospheric air and gases are exploded inside the cylinder by means of an electric spark, or by any other method. The improvement consists in connecting the exhaust or discharge pipe of the cylinder with a condensing chamber in a similar manner to that employed in ordinary condensing steam-engines. The heated air is condensed in the chamber by a jet of cold water, and by this means a vacuum is produced in the cylinder. The ordinary air-pump is used to discharge the injection water.

913.—Alfred Vincent Newton, of 66, Chancery Lane, London, mechanical draughtsman, for "*Improved means of preventing the leakage of barrels, and of rendering packages and fabrics impervious to air and gases.*" A communication. Patent dated March 31, 1865.

This invention relates to the use of a composition prepared by the admixture of glue and glycerine, either with or without sugar, as a coating for barrels and fabrics. These substances may be combined in about the following proportions—viz., glue, 50 lb.; glycerine, 100 lb.; sugar, 25 lb.

917.—James Bathgate, of Edinburgh, for "*Improvements in gas-meters, and in the machinery or apparatus connected therewith.*" Patent dated March 31, 1865.

This invention relates, in the first place and chiefly, to a new method of construction and arrangement of the parts of dry gas-meters, the cases of which are made by preference in cast-iron, whereby great facility is afforded for their being taken in pieces, cleaned, and repaired, and a correct action of the apparatus is ensured.

In constructing the cases of gas-meters according to this invention they are made in one piece and without a central division, in contradistinction to those now in use, which arrangement enables the diaphragms (when necessary) to be lifted out with little trouble. The one diaphragm back (which is made of sheet-iron or other suitable material) is substituted in lieu of and answers the purpose of two, at the same time supplying the place of and answering the purpose of a central division. This back, on which are fixed the two diaphragms, is fixed by screws, the holders projecting from the centre of the case. The chief advantage derived from this arrangement is that the two diaphragms can be taken out together.

The second part of this invention relates to a peculiar arrangement of the valves, which are also easily taken out, each valve being worked upon a separate plate, to which plates are also connected the inlets to the diaphragms and exit-tubes. By removing the screws by which the small plates are connected to the valve-plate these last-mentioned plates are removed. In the valve-plates are two holes, viz., one from each of the exit tubes, over which is placed a box which contains the measured gas from these tubes. This box is attached to the valve-plate of the meter by screws; on the inside of this box, through which the measured gas passes, are two vertical tubes, of sufficient depth that in the event of condensation taking place they prevent the condensed gas from getting into or interfering with the action of the valves.

Another important feature of dry gas-meters constructed under this invention is the use of a double flange on the top of the case, by means of which the valve-plate and top box connected to it are attached to the metercase. On the centre of the valve-plate, and contained within the top box, there is fitted by screws, studs, or otherwise, a small plate containing the step crank, the crank support, tangent catch, and support for index spindle. The whole of these latter parts may be removed by taking out the screws by which the plate containing them is fixed to the valve-plate.

943.—Charles Denoon Young, of Perth, mechanical engineer, for "*Improvements in double-acting lift and force pumps.*" Patent dated April 4, 1865.

The objects of this invention are to combine and arrange the parts of the pump together in such a manner as will admit of readily getting to any one of the valves without interfering with the others; constructing and arranging the water passages of the pump in combination with the inlet and discharge pipes, with a view to have the pipes as straight and free from bends as possible for giving as little resistance to the flow of water through them as practicable; providing each inlet-valve with an independent inlet-pipe extending into the dyke or well from whence the water is drawn, also each delivery-valve with an independent discharge-pipe extending from the pump to the tank or trough into which the water may be discharged; also the arrangements of parts by which the stroke of the pump can be increased or diminished to suit the power for working it.

The general structure of the pump consists in attaching the cylinder of it to a suitable frame of iron or wood, and arranging a shaft with gearing or pulleys to the frame for giving motion to the piston of the pump through a connecting-rod and slide-guides by means of horse, steam, or other power. In place of providing the shaft with an ordinary crank it is furnished with a disc-crank, which is provided with a number of holes at various distances from the centre of the shaft for attaching the crank-pin. By this means the stroke of the pump can be increased or diminished to suit the power for doing the work, as before stated, or for increasing and diminishing the quantity of water pumped.

945.—John Richardson Wigham, of Albany House, Monkston, gas and lighthouse engineer, for "*Improvements in the means and apparatus employed for illuminating lighthouses.*" Patent dated April 4, 1865.

The first of these improvements relates to the illuminating of lighthouses by means of combustible gases produced from fluid or volatile oils, liquid hydrocarbons, bituminous matters, shales, cannels, shale oils, or semi-liquid oleaginous compounds, and burnt without the aid of a wick, instead of burning liquid oils by means of wick lamps as heretofore employed.

The second of the improvements consists in the use of such description of burners for burning the above-mentioned or any other description of combustible gases as will dispense with the use of chimney-glasses. The burner preferred consists of a number of jets so ranged together in a cluster, and branching from a central supply-pipe, that the requisite air for supporting combustion has ready access to each of the burners.

949.—William Brookes, of 62, Chancery Lane, London, civil engineer for "*Improvements in means or apparatus for obtaining motive power by the aid of steam, gas, or other fluids.*" A communication. Patent dated April 4, 1865.

This invention relates to improvements in motive power wheels worked by steam, gas, or other fluids, acting by a series of successive different and decreasing impulses, without the motion of the fluid being arrested or stopped in its course. By the various arrangements in the specification are indicated conduits progressively increasing in section, and confining the steam by remaining constantly full of it, and protecting it also against the diffusion to which it would be subjected if it passed away with variable depth upon the walls or sides of conduits of equal sections, not entirely filled with steam, but having in the centre air or other more or less rarefied gas or vapour, which would be dispersed into the interior of the tubes, as if they were in the atmosphere when the jet of steam is projected.

951.—Robert Baynes, of Mansel Villas, Wimbledon, gentleman, for "*Improvements in suction and force pumps.*" Patent dated April 4, 1865.

These improvements consist in the application of flexible tubing to the pumping or raising of water or other fluids, in combination with rollers or other pressing surfaces, whereby the tubing is collapsed and caused to force the water, the subsequent expanding of which tubing produces a partial vacuum, having the effect of sucking or raising up the water, as in the suction-pump. Instead of the pressure being exerted by rollers, it may be the direct pressure of the pressing surfaces on a bed or table, on which a flexible pipe or pipes are laid.

972.—Charles Esplin, of 32, Tyer Street, Lambeth, London, for "*Improvements in apparatus for regulating the supply of gas.*" Patent dated April 5, 1865.

In order more readily to regulate the flow of gas coming from a gas-main to a building or other place where several burners are employed in the same supply, and where such burners are more or less distant from each other and from the supply-pipe from the main, the apparatus is applied in the following manner:—On the supply-pipe coming from the main there is a diaphragm valve or cock, and at the back of the cover of this diaphragm is applied the end of a small tube. The other end of this tube may be in any desired position in the building or place, and more or less distant from the supply-pipe, depending upon the locality where it is wished to have the power of regulating the whole supply of gas without having to go to the cock or valve before mentioned, which is on the supply-pipe. This end of the small pipe is fixed to a vessel which is divided by a diaphragm of larger diameter than that of the valve or cock before mentioned. The small tube is to be full of air, or it may be other fluid. The regulation of the supply of gas is effected by causing the air or other fluid contained in the small tube to be pressed on by the regulating diaphragm, acted on by means of a screw or other instrument, by which the fluid will press on the diaphragm in the cock or valve in the supply-pipe, and thus the passage of the gas from the main to the supply-pipe will be reduced in dimensions, and the flow of gas will be lessened. The reverse action will follow the moving back of the regulating diaphragm, as the passage for the flow of gas through the cock or valve on the supply-pipe will then be enlarged.

980.—George Davies, of 1, Serle Street, Lincoln's Inn, London, and 28, St. Enoch Square, Glasgow, engineer, for "*An improvement in illumination.*" A communication. Patent dated April 6, 1865.

This invention consists in consuming the carbon in, and increasing the brilliancy of a flame produced by burning animal, vegetable, or mineral oils, or fatty matter, or the flame of gas containing an excessive amount of carbon, such as the gas produced by the consumption of resin, or the residuum of coal oil after distillation, by causing the said flame to decompose a supply of water conveyed to it by means of a wick or its equivalent. By this decomposition of the water, oxygen and hydrogen gases are evolved, and these uniting with the flame will consume the excess of carbon, and by this union of the gases the flame is rendered more brilliant, and entirely free from offensive vapours.

986.—Pierre Hugon, engineer, of Paris, for "*Certain improvements in gas-engines.*" Patent dated April 6, 1865.

This invention refers to gas-engines, in which motive power is obtained by the explosion or combustion of gas or gaseous matter acting upon a piston in a cylinder, and thereby producing motive power. Hitherto such explosion or combustion has been effected by an electric spark, but this mode is believed to be uncertain and irregular. The object of the present improvements is to produce the explosion or combustion with certainty, and at regular intervals. For this purpose, slide or other valves are employed, carrying gas-burners or nozzles supplied with gas under pressure, which is lighted by other gas-burners kept constantly kindled, and either attached or not to the valves. These valves, which work against orifices in the cylinder, so as to open and close them, bring the burners to and from these orifices at certain intervals, and they thus admit, intercept, or regulate the supply of working gas to the cylinder, and also permit and shut off the escape of gas therefrom after the explosion. If thought desirable, separate valves may be used for these purposes. Gas, or an explosive gaseous compound, is admitted into the cylinder through an induction port, and at the required moment the valve brings the flame of the burner in contact with this gas or gaseous compound, so that it ignites and explodes thereby moving the piston, and at the proper time the valve opens the eduction port and allows the residuary gases to escape. The burner is extinguished by the explosion, and is relighted by the outer burner. Water or other vaporizing liquid is injected in showers, or otherwise into the cylinder to cool it, through a passage opened and closed by the same valve as the one which carries the burners, or by a separate valve.

An improved slide-valve, or set of valves, is constructed for the purpose of this invention, with burners at the ends, or at the centre, and with channels for the inlet and outlet of the gases. In order to distribute the gases equally, a supplementary slide-valve is sometimes used, which works outside the other valves, on a seat which is recessed to form a chamber for air. The cylinder is usually fed from a mixing chamber into which gas is forced, and air is drawn.

997.—William Jackson, of Glasgow, for "*An improved method of mixing gases and vapour, and in the machinery or apparatus connected therewith.*" Provisional protection only obtained. Dated April 7, 1865.

This invention relates to an improved vaporizer, which consists of two apparatus, the one for producing a current of the aëriform fluid which is required to be charged with vapour, and the other for charging the aëriform fluid with vapour. The air machine consists of an outer case containing water or other liquid, in which revolves the drum, having a hollow axis. This drum is divided into chambers by divisions in line with the axis, and running from the circumference of the hollow axis to the circumference of the drum, but these divisions may be arranged diagonally and extending from side to side, or situated in any other convenient manner. These chambers have openings at one side for the entrance and at the other side for the exit of the aëriform fluid. The charger is a case divided into two parts by divisions parallel to the top and bottom, into which divisions are fixed tubes running down towards the bottom of the case. These tubes are closed at the lower end, but holes are punctured through the circumference. Each tube is enclosed in one or more tubular wicks fastened to the tube above the holes, and closed at the bottom by tying or in any other suitable manner; and in order to procure thorough distribution of the aëriform fluid, spiral wires having a diameter slightly exceeding that of the outside of the tubes are inserted between the tubes and the wicks, or surrounding the former and within the latter.

1001.—Michael Henry, of 84, Fleet Street, London, for "*Improvements in the mode of, and apparatus for, purifying smoke, which improvements are also applicable to other purposes in which gas or vapour is to be separated from substances combined therewith or held in suspension therein.*" A communication. Provisional protection only obtained. Dated April 7, 1865.

This invention consists in the construction and employment of apparatus in which the smoke, gas, or vapour is led into a passage or chamber and caused to pass through it in a downward direction, and while descending it is subjected to the action of water or other liquid, or of a solid substance, such water, liquid, or solid being introduced in showers or jets, or in a finely divided condition, and caused to drop or fall through the passage or chamber so as to pass in a downward direction through the smoke, gas, or vapour, from which in its descent it separates or expels the soot or other solid matters combined therewith, or substances held in suspension therein, and falls with the substances so separated or expelled into a receiver at the bottom of the passage or chamber. The soot or other substances so expelled may be afterwards separated from the water or other agent to be usefully applied.

1027.—Richard Archibald Brooman, of 166, Fleet Street, London, for "*Improvements in apparatus for storing petroleum and other inflammable liquids of less specific gravity than water.*" A communication. Provisional protection only obtained. Dated April 11, 1865.

This apparatus consists of a well or tank of metal or masonry, in which is placed a metal holder similar to a gasholder, and with space between its sides and the outer tank. The holder is open at the bottom and is secured by flanges and bolts from rising. From the centre of the cover a dome rises, which is provided at the top with a man-hole. A tube carrying a float passes down through the cover of the holder, and at a level above the cover of the holder there is a water outlet provided with a tap. The petroleum is admitted into the holder through a pipe entering

the upper part of the dome on the cover; outlet takes place through another pipe furnished with a tap and connected to the lower part of the dome. There is a channel at the bottom of the tank for receiving all matters deposited, and for allowing a person to enter the holder to clean the inside when the tank and holder are empty. The tank and the holder are filled with water.

1058.—CHARLES FORSTER COTTERILL, of Cannock, gentleman, for "*Improvements in pipes for conveying water and gas, and for other like purposes; and a new or improved composition for joining the said pipes and other similar pipes.*" Patent dated April 13, 1865.

This invention consists in joining pipes together by means of a conical socket or conical loose collar or thimble, in which the end or ends of the pipes are inserted, the said socket or loose collar being provided with a hole through which the lead, or other filling composition, is introduced into the space between the socket or loose collar and the end or ends of the pipes inserted therein. The composition consists of pitch and sand.

1072.—THOMAS NEWBIGGING, gas engineer, and ALEXANDER HINDLE, gas-fitter, both of Bacup, for "*Improvements in wet gas-meters.*" Patent dated April 17, 1865.

Wet gas-meters, as hitherto constructed, have this defect, viz.—if subjected to an excess of gas pressure, as is sometimes the case, the water will be driven from them through the index-box, the "head" of water in the tube which encloses the shaft giving motion to the registering mechanism having been relied upon alone to resist the gas pressure, and consequently the index-box or case has been hitherto left open to the atmosphere, being used merely as a cover to protect the mechanism from damage or from being tampered with.

The object of this invention is to remove the defect above referred to, and the improvements consist in making the box or case enclosing the index or registering mechanism tight against the atmosphere, or so as to prevent the air enclosed in it from escaping, which will thus resist the gas pressure, and will prevent the water in the meter from rising up the tube which encloses the shaft giving motion to the registering mechanism. It is preferred to make the box or case of cast iron with one side glazed, so that the index may be read through it, and to secure it to the upper part of the meter-case by screws, making the joint between the two air-tight by putty or other suitable cement. Or the box or case may be made of tin plate or any other suitable material and soldered to the meter-case. Or the box or case may be made so as to be closed upon all sides, and screwed upon the upper end of the tube ascending from the meter and surrounding the shaft giving motion to the registering mechanism.

1074.—LOUIS DE ST. CÉRAN, gentleman, of 51, Rue de Malte, Paris, for "*Certain improvements in gas ammoniacal engines.*" Patent dated April 17, 1865.

This invention relates to an ammoniacal gas-engine in which the same water is used again and again. For this purpose a boiler or heating vessel is connected with a refrigerating worm which communicates with two receivers, one of which is filling while the other is emptying. These receivers communicate with a cylinder, which is furnished with a piston and communicates with a closed vessel filled with cold water. The vessel also communicates with the boiler in such a manner that the water, after absorbing ammonia as hereinafter described, is forced or pumped back into the boiler. Water saturated with ammoniacal gas having been introduced into the boiler and heated, gives off the gas, which passes into the worm, where it is refrigerated, and it thence flows into one or other of the two receivers, in which it is liquefied. Communication is thence opened between the receiver and the cylinder, whereupon the liquid ammonia vaporizes (being freed from the pressure from the boiler), and it flows in a state of vapour into the cylinders and acts upon the piston. After working in the cylinder, it passes into the close vessel, where it dissolves in or becomes absorbed by the cold water, which being thus saturated with gas is pumped or forced back into the boiler, and the gas is again given off under the action of heat. Thus the same water serves again and again, being cooled and saturated with gas and then reheated until the gas is given off; the process is repeated without a fresh feed of water or of gas (from without) being required.

This improved engine or ammoniacal gas motor is constructed with reference to the three following facts or principles:—1. That water saturated with ammoniacal gas is readily disengaged therefrom when heated. 2. That ammoniacal gas liquefies readily when compressed and cooled. 3. That it is readily redissolved by cold water.

1076.—JOSEPH DOUGAN, of Coed Talon, near Mold, North Wales, for "*Improvements in apparatus for distilling hydrocarbons from coals, schists, and other minerals.*" Patent dated April 17, 1865.

For the purpose of this invention a long retort is employed, which is by preference made of iron, and clothed externally with fire-clay or fire-tiles, or other materials may be used in the construction and setting of the retorts. The two ends of the retort are closed. The coals or other minerals capable of yielding hydrocarbons are fed in at the upper part, and near one end of the retort, by means of a revolving cylinder, into which the coals or minerals are received at one part of its revolution, and discharged therefrom into the retort at another part of its revolution. The spent matters are discharged from the retort at the other end by means of a similar rotating cylinder. The coals or other minerals fed into the retort at one end are progressively moved towards the other end by means of a screw extending nearly from one end to the other. The shaft or axis of the screw is hollow, in order to allow the heat and products of combustion passing through the same on their way to the chimney after heating the retort. At intervals along the upper part of the retort are outlet-pipes, to convey the distilled products to condensers; and at intervals along the lower parts of the retort, furnaces, or fire-places, are constructed transversely to the axis of the retort, and the heat and products of combustion from the fires pass around the retort, and thence away to the chimney or chimneys heating the interior of the retorts, by being caused to pass through the hollow shaft or axis of the screw. A slow rotary motion is given to the shaft of the screw by means of a screw or worm working into a screw or worm wheel, and fixed on the axis or shaft of the screw; or such motion may be otherwise given. Rotary motion is given to the feeding and discharging cylinders by means of suitable gearing from the screw-shaft or otherwise.

1099.—MEGUREDITCH HOUSSEPIAN, of Manchester, merchant, for "*Certain improvements in pumps.*" A communication. Patent dated April 20, 1865.

The invention is designed for the purpose of obtaining the suction required in pumps, without friction, by means of the rise and fall of an inverted bell or cylinder in an annular cylindrical space containing mercury. The novel arrangement and construction of apparatus constituting the pump consists of an annular space formed by two hollow vertically fixed cylinders surrounding each other, in which a column of mercury is contained, and into which is lowered and placed the open end of an inverted bell or hollow cylinder, which is caused to rise and fall by being attached to the working connecting-rod of the pump. The inner fixed cylinder is closed at the top by a valve, as also is the inverted bell or hollow cylinder, the action of which, when being raised, causes the mercury on its outer surface in the annular space to be depressed by the atmosphere, and to rise in the annular space formed between the inner fixed cylinder and the inverted cylinder, thereby (through the medium of the air and water tight joint so formed) producing a vacuum in the interior of the inverted and inner fixed cylinders. These cylinders being in connexion with the suction-pipe of the well, fill with liquid, so that, when the inverted bell or cylinder descends or falls, the valve immediately closes on the top of the inner fixed cylinder, and the water is ejected through the valve in the cover of the inverted bell or cylinder into the outer fixed cylinder, from which it is finally discharged through an outlet in the same in one continuous stream.

1101.—WILLIAM CLARK, of 53, Chancery Lane, London, for "*Improvements in taps or stop-cocks.*" A communication. Provisional protection only obtained. Dated April 20, 1865.

This improved tap is provided with a chamber of any suitable form and material, in which is constructed the orifices for the introduction and escape of the fluid. A valve of the form suited to that of the tap is fitted to rise and fall in the chamber, so as to open or close the inlet. The amount of fluid passed by the tap may be indicated by an index worked from a stem marking on a dial the angle of rotation by the said stem.

1109.—FRANCIS WISE, of Chandos Chambers, Adelphi, London, consulting engineer, for "*Improvements in gas-regulators, and valves for the same.*" A communication. Patent dated April 20, 1865.

The invention consists, firstly, in the use in gas-regulators of a holder of a tapering form so constructed that as the said holder falls the pressure of gas in the outlet-pipe shall be increased to compensate for the increased friction of a large amount of gas demanded for a large number of burners in extended gasfittings. The invention consists, secondly, of a valve having a stem or tail, in which are formed two or more excavations or depressions of different lengths, and arranged so that on removing the valve from its seat the longest excavation may form the communication for the passage of fluid prior to the fluid escaping along the shorter excavation. The improved valve will thus present for the escape of the gas openings increasing in number and area as it (the valve) is removed from the seat.

1112.—EDWARD THOMAS HUGHES, of the firm of Hughes and Son, 123, Chancery Lane, London, for, "*An improved packing for steam-cylinders, stuffing-boxes, and closed vessels containing water, air, or gases; and for other similar purposes.*" A communication. Provisional protection only obtained. Dated April 21, 1865.

This improved packing is intended to replace with great advantage and economy that now in use composed of hemp or tow, and soaked in grease or oil. The packing is formed of bands of paper of a circular or other suitable form, and the bands are soaked in boiling water until perfectly softened, after which they are placed one upon another around the piston and in the stuffing-box to the required thickness. Thus prepared, this packing requires neither oil nor grease, and it is also much cheaper and more durable and efficient than any other known packing.

1191.—JULIAN BERNARD, of Lincoln's Inn Fields, London, gentleman, for "*Improvements in apparatus for raising water and other fluids, and in raising and lowering such apparatus.*" Patent dated April 28 1865.

These improvements relate to the description of pumping apparatus ordinarily used in mining, wherein a series of lifts is employed, and consists, firstly, of a novel and improved clack and door piece, the door being so connected to the piece that it is at the same time free to move on such connexion. The invention consists secondly in so arranging and disposing the several corresponding parts of the door, and those immediately connected with it, as to come into exact and proper position in relation to the flange fastenings or other part to or by which the said door is secured, and which is effected by so placing the door upon the hinge, stud, or joint, that the fastenings will take into corresponding slots or apertures, and find their exact position by the mere movement of the door. The invention relates thirdly to the mode and means of fastening or securing employed, and consists in the application and use of studs, bolts, and nuts partially and permanently fixed in the door, and parts to which it is connected and permanently fixed. Fourthly, it relates to the mode and means of making tight or packing the joint between the door and the flange.

APPLICATIONS FOR LETTERS PATENT.

70.—JAMES MARIUS MACRUM, of Hill Street, Knightsbridge, Middlesex, gentleman, for "*Improvements in the apparatus and process for distilling oils and other liquids.*" A communication. Jan. 9, 1866.

85.—RICHARD ARCHIBALD BROOMAN, of 166, Fleet Street, London, for "*An improved method of producing oxygen.*" A communication. Jan. 10, 1866.

91.—PERCIVAL ASHTON BATCHELOR, of 34, Upper Berkeley Street, Portman Square, London, engineer, and FREDERICK REDDALL, of 81, Bride Street, Westbourne Road, Barnsbury, accountant, for "*Improvements in the construction, arrangement, and application of retorts and settings, in combination with machinery or apparatus for the manufacture of coal or other gases.*" Jan. 11, 1866.

93.—Joseph Cook Angus and George Stuart, both of Newcastle-on-Tyne, Northumberland, engineers, for "*Improvements in apparatus for drawing off and measuring liquids.*" Jan. 11, 1866.

102.—William John Walsh, of Brentwood, Essex, for "*Improvements in cocks, taps, and valves.*" Jan. 12, 1866.

110.—John Calvin Thomson, of 14, Burney Street, Greenwich, Kent, for "*Improvements in means or apparatus employed in the combustion of gas in gas-stoves and burners employed in heating and cooking.*" Jan. 13, 1866.

133.—George White, of 68, Queen Street, Cheapside, London, for "*Improvements in gas-burners.*" A communication. Jan. 15, 1866.

135.—Henry Edward Newton, of 66, Chancery Lane, London, mechanical draughtsman, for "*Improvements applicable to water-closets and commode-pans.*" A communication. Jan. 15, 1866.

GRANTS OF PROVISIONAL PROTECTION.

2419.—Charles Wyatt Orford, of Lifford, King's Norton, Worcestershire, engineer and architect, for "*A new and improved machine for the collecting and diffusing of water or other fluids.*" Sept. 22, 1865.

2946.—William Easton, of Gateshead, Durham, for "*Improvements in the construction of pumps for raising water and other liquids.*" Nov. 15, 1865.

2972.—Frederick Wilkins, of 254a, Oxford Street, London, for "*Improvements in apparatus for the production of hydrocarbon or other vapours, parts of which apparatus are also applicable to measuring gaseous or fluid matter.*" Nov. 18, 1865.

3153.—Piarron de Mondesir, engineer in the High Roads Imperial Body, Paul Lehaitre, C.E., and Augustin Julliene, engineer in mechanics, all of No. 60, Boulevart de Strasbourg, Paris, France, for "*An improved mode of applying the compression of air for ventilating purposes, and the compression of any gas for hurrying along elastic fluids in conveying pipes.*" Dec. 8, 1865.

3268.—Henry Planck, of Manchester, Lancashire, dentist, for "*Improvements in apparatus for regulating heat obtained by the combustion of gas.*" Dec. 18, 1865.

3292.—William Clark, of 53, Chancery Lane, London, engineer, for "*A new and improved apparatus for cooling and purifying air in rooms or compartments, and ventilating the same.*" A communication. Dec. 20, 1865.

3303.—George Davies, of 1, Serle Street, Lincoln's Inn, London, and 87, St. Vincent Street, Glasgow, C.E., for "*An improved gas-burner.*" A communication. Dec. 21, 1865.

3314.—Edward Deane, of Arthur Street, London, for "*Improvements in pipes, tubular columns, and hollow structures for masts, oars, shear legs, lifeboats, and ordinary boats, for water, gas, and waste water pipes, and for other similar constructions where great strength is required.*" Dec. 22, 1865.

3330.—Henry Davis Hoskold, of Cinderford, Gloucestershire, mining engineer, and William Blanch Brain, of Forest of Dean, in the same county, mining engineer, for "*Improvements in pumps.*" Dec. 23, 1865.

15.—Richard Archibald Brooman, of 166, Fleet Street, London, for "*An improved extensible apparatus for the passage of gases and fluids, especially adapted for gaseliers.*" A communication. Jan. 2, 1866.

85.—Richard Archibald Brooman, of 166, Fleet Street, London, for "*An improved method of producing oxygen.*" A communication. Jan. 10, 1866.

NOTICES TO PROCEED.

2184.—Edwin Augustus Curley, of 11, Amwell Street, Clerkenwell, London, mechanical engineer, for "*Improvements in apparatus, by means of which certain liquids, common air, and certain elastic fluids are made available in the production of light, and their quantity regulated and measured, parts of which improvements are applicable for other purposes.*" Aug. 25, 1865.

2195.—John Fordred, of Blackheath, Kent, gentleman, for "*Improvements in the treatment of certain products obtained in the refining of petroleum and other hydrocarbon oils.*" Aug. 26, 1865.

2259.—Charles Horsley, of Wharf Road, City Road, London, C.E., for "*Improvements in meters or apparatus for measuring water or other fluids, partly applicable for exhausting air or other gases.*" Sept. 1, 1865.

2270.—Stephen Kettle, of 41, Goswell Street, Clerkenwell, London, for "*Improvements in water-closet apparatus, urinals, and the like, and appliances thereto.*" Sept. 4, 1865.

2439.—Alfred Vincent Newton, of 66, Chancery Lane, London, mechanical draughtsman, for "*Improved apparatus for generating illuminating gas.* A communication. Sept. 23, 1865.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

44.—John Leigh, "*Improvements in the treatment of gas produced by the distillation of coal, cannel, bituminous shale, boghead, mineral oils, petroleum, or other combustible substances, and for the obtaining of certain products therefrom.*" Jan. 6, 1863.

105.—John Thomas Stroud, "*Certain improvements in fixed and portable lights for domestic and other uses, applicable for burning gas and the mineral oils or spirits now so commonly used.*" Jan. 13, 1863.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

17.—James Harris, "*Improvements in apparatus for regulating the pressure and flow of steam, water, and other fluids.*" Jan. 1, 1859.

Legal Intelligence.

COURT OF EXCHEQUER.

MONDAY, JAN. 15.

(*Sittings in Banco, in Hilary Term, before Lord Chief Baron* Pollock, *and Barons* Channell *and* Pigott.)

WARD *v.* THE GASLIGHT AND COKE COMPANY.

Mr. Karslake, Q.C., moved for a rule calling upon the company to show cause why the nonsuit ordered to be entered into in this case should not be set aside and a new trial ordered.

The case was tried before Lord Chief Baron Pollock at the London sittings after last term, and it arose out of the burning down of Saville House, in the month of February of last year. It will be remembered the fire originated in an explosion of gas, and that finally the whole of the extensive premises were gutted. The claims arising out of the fire are said to amount to between £30,000 and £40,000.

Ward, the plaintiff in the present action, was an invalid chair maker, and he occupied warerooms on the ground floor. The explosion which led to the fire took place in the passage of the premises almost immediately overhead, and which were rented by a foreigner named Bloom, and were used as concert, refreshment, and billiard rooms. There was no doubt as to the origin of the fire; it was made perfectly plain that it was owing to the escape of gas in a large body from the inlet-pipe of the meter in the passage just referred to, the meter itself having been that very afternoon removed by the company, for the purpose of being replaced by a smaller one.

The case on the part of the complainant was that the escape of gas which caused the explosion was due to the tampering with the inlet-pipe by Bloom and his servants; and undoubtedly it was clearly established that Bloom's servants, in their endeavours to light the chandelier in the billiard-room, were immediately responsible for causing the explosion. On the other hand, it was endeavoured to be established on behalf of the plaintiff that when the meter was removed the inlet-pipe was not sufficiently plugged, or was not plugged at all, and that therefore the accident arose from this neglect, notwithstanding the interference of Bloom's servants.

Lord Chief Baron Pollock ruled that, according to the terms of the declaration and on the evidence respecting the interference of Bloom's servants, the explosion was not due to the negligent conduct of the complainant; and therefore a verdict was ordered to be entered for them, the jury at the same time expressing their strong concurrence in the propriety of this conclusion.

After a short statement of the case from Mr. Karslake,

Lord Chief Baron Pollock said the learned counsel might take a rule to set aside the nonsuit, as it would be most undesirable to dispose of so important a question without a final argument.

Rule *nisi* accordingly.

FRIDAY, JAN. 19.

(*Sittings in Banco, before Lord Chief Baron* Pollock, *and Barons* Martin, Channell, *and* Pigott.)

DYER *v.* BEST.

This was an action brought to recover penalties from the defendant for having acted as a town commissioner after having been disqualified by participating in a contract for work done for the town. The action was tried before Mr. Baron Channell at the Staffordshire summer assizes, when it appeared that the defendant, Mr. Best, had been originally elected a town commissioner for Burton-on-Trent in 1856, and that at that time he was in partnership with a Mr. Bowler, as builders and joiners in that town. The plaintiff had been appointed manager of the gas-works, which were under the control of the commissioners, and it was his duty as such manager to look over all the accounts for work done for the commissioners. Small jobs of work had been done for the gas-works during each of the years from 1859 to 1863 by the firm of Bowler and Best, and the accounts for such work having been duly examined by the plaintiff had been paid by the commissioners in the early part of each of the years following the work done. By the 9th section of the Commissioners Clauses Act, 1847, "any person participating in any manner in any contract, or in the profit thereof, shall thenceforth cease to be a commissioner;" and by the 15th section, "every person who shall act as a commissioner, being incapacitated, shall for every such offence be liable to a penalty of £50, and such penalty may be recovered by any person with full costs of suit in any of the superior courts." It was proved at the trial that the defendant had acted as commissioner four times after an act of disqualification, and that one of such actings was within one year of the commencement of the action. They did not, however, fix the date either of the acts of disqualification or of acting. Upon this finding a verdict was entered for the plaintiff for £200, being four penalties of £50 each. Mr. Gray, Q.C., obtained a rule in the last term to show cause why the verdict should not be reduced to £50, inasmuch as the plaintiff, by the Statute of Elizabeth, which limits actions for penalties, could only bring his action within a year of the accrual of the penalty; and for a new trial on the ground of misdirection as to the necessity for evidence to prove that there had been an unbroken continuity of tenure of office by defendant as commissioner between the disqualifying act and the acting which rendered him liable to the penalties. The Commissioners Act requires one-third of the commissioners to retire each year, leaving them to be re-elected. The 31st of Elizabeth, cap. 5, upon which the arguments as to the limitation principally rested, enacts that all information, &c., upon any Statute penal made or to be made whereby the forfeiture is or shall be limited to the Queen, shall be commenced within two years; and all such actions, &c., whereof the benefit is limited to the Queen, or to any other which shall prosecute in that behalf, shall be commenced within one year. An old case decided in the 8th of William III. was cited on behalf of the plaintiff, in which it was reported to have been distinctly held by a majority of four judges to three in a court of error that the case where the penalty went to the informer alone was a *casus omissus* from the Statute, and that as to him, therefore, there was no limitation.

The arguments in the case were proceeded with on the 17th and 18th, and were concluded to-day. Mr. Huddleston, Q.C., and Mr. H. Matthews showed cause against the rule; and Mr. Gray, Q.C., and Mr. Staveley Hill, were heard in support of it.

Lord Chief Baron Pollock, in giving judgment, said that he was of opinion that this case was not a *casus omissus* from the Statute of Elizabeth, and that if a penal Act was put in force by a common informer, it must be so within a year; that to suppose the opposite would be to suppose that the Legislature, which in the 7th of Henry VIII. had limited every informer, had, in enacting the Statute of Elizabeth, which repealed the Statute of

Henry, committed the extraordinary blunder of limiting the Queen, and setting free the informer *pro se ipso*; that he could not suppose the Legislature guilty of such folly and carelessness; that the opinion of the whole of the profession, not only during the whole number of years that he had been connected with it, but, as appeared also from their writings, of such names as Chief Baron Comyn, Buller, and the editors of "Williams's Saunders," was contrary to such a construction; that if the verdict was to stand, the plaintiff therefore could only recover one penalty. He was of opinion, however, that there must be a new trial. In an action of this character, just as in the imputation of a crime, the charge should be carried by the plaintiff beyond all reasonable doubt; that he should be very sorry to point out to the present plaintiff in what way he could succeed, and would not, therefore, go more at large into the nature of the objection.

Baron MARTIN observed that it was notorious as a matter of history that actions by informers were brought to an enormous extent in the time of Henry VII., and that the belief that that was done at the instigation of the King had been a principal cause of his unpopularity. The Statute of Henry VIII. had been passed to remedy this, and the Statute of Elizabeth had been similarly passed at a time when she had incurred great unpopularity by the grants of monopolies. He agreed, also, that there must be a new trial, as he thought on the evidence the plaintiff ought to have been nonsuited.

Barons CHANNELL and PIGOTT concurred, the former stating, however, that his own opinion was against the new trial.

The rule was, therefore, made absolute.

LAMBETH POLICE COURT.

TUESDAY, JAN. 9.

(*Before* GEO. P. ELLIOTT, *Esq.*)

METROPOLITAN BOARD OF WORKS *v.* TAUNTON.

Mr. *Frederic Taunton* appeared to a summons taken out by the Metropolitan Board of Works, to answer for an offence committed under the Sales of Gas Act. The charge preferred against him was that he, being an inspector of gas-meters, appointed by the Town Council of the borough of Kingston-upon-Thames, had unlawfully conducted himself in the execution of his office, that is to say, by stamping meters out of his jurisdiction, to wit, at Camberwell, within the jurisdiction of the Metropolitan Board, contrary to the Statute, &c., whereby he had incurred a penalty of £5.

Mr. METCALFE, barrister, appeared for the complainants, and Mr. GORDON, a solicitor, for the defendant.

There was another summons, appointed for hearing this day, against Mr. *Thomas Glover*, of Clerkenwell, for unlawfully fixing such unstamped meters.

Mr. GORDON said it would perhaps be more convenient if the latter summons were taken first.

Mr. METCALFE objected to such a course, as the hearing of the summons against the defendant Taunton would put the magistrate in possession of the facts of the case in the clearest possible manner.

Mr. ELLIOTT said it was for the learned counsel to say which summons he would go on with first.

The defendant Taunton, on being called upon, pleaded "Not guilty" to the complaint.

Mr. METCALFE said this was a summons taken out by the Metropolitan Board of Works, under the Sales of Gas Act, 1859, 22 & 23 Vict., c. 66, the 11th section of which provided that, "In case any inspector of meters shall stamp any meter without duly testing and finding the same to be correct, or shall refuse, or for three days after being so required under the provisions of this Act neglect, without lawful excuse, to test any meter, or to stamp any meter found to be correct on being so tested, or shall be guilty of a breach of any duty imposed upon him by this Act, or shall otherwise misconduct himself in the execution of his office, every such offender shall upon conviction forfeit a sum not exceeding £5 for every such offence." The object of this Act of Parliament was to provide an easy mode of testing the accuracy of gas-meters supplied for the use of the public, and for this purpose inspectors were appointed as public officers between the makers and sellers of gas on the one hand, and the consumers of gas on the other. Districts were arranged under the Statute, in which the inspectors so appointed were to carry out their functions, and to each of these districts there was issued by the Government the necessary testing apparatus, which were stamped for the district in which they were to be used. For the purpose of the present inquiry, it was only necessary to say that such testing apparatus was issued for the borough of Kingston-upon-Thames to Mr. Taunton, the inspector appointed by the Town Council of that borough. There were provisions in the Statute by which the inspector had jurisdiction in the district to which he was appointed, and fees were to be taken by him for stamping meters, which fees were to be accounted for by him. Mr. Taunton, when appointed, entered into an agreement with the Town Council of Kingston to procure from the Government the necessary testers, and to open a place in which they should be deposited, and where his business should be carried on. The first place to which he went, and which was recited in the agreement, was in Cambridge Road, Norbiton, within the borough of Kingston; and there were provisions in the agreement that he was not to leave that place without giving notice to the corporation, and any other place which he might take was to be subject to their sanction and control.

Mr. GORDON asked Mr. Metcalfe whether he was now appearing for the borough of Kingston.

Mr. METCALFE said he did not know why he should be asked that question.

The CLERK said the summons was taken out by the Metropolitan Board of Works.

Mr. METCALFE continued: Mr. Taunton was appointed on June 15, 1862. In the spring of last year he appeared to have shut up his place at Kingston altogether, without giving any notice to the corporation of that borough, and took a place at Camberwell, where he commenced stamping meters. He took with him the Kingston testers, and for a long time had been engaged in stamping meters at Camberwell with the Kingston brand upon the stamp. The act now charged against him was misconduct in the performance of his duty—in other words, that he, being appointed inspector for the borough of Kingston, and having the Kingston brand or stamp only to use, had taken that stamp out of the district into the borough of Lambeth, within the metropolitan district, and used it there, thus giving persons who used meters so stamped by him to understand that they had been tested and stamped within the borough to which he was appointed. The worthy magistrate would of course easily perceive that, under these circumstances, the question arose, to whom would the defendant account for the fees received by him. He (Mr. Metcalfe) did not wish to make a charge of fraud, but it certainly did seem odd that a person should receive a large number of fees in the metropolitan district, he having only jurisdiction at Kingston. He could not account for the fees so received to the Town Council of that borough, for they had no right to them; whereas, he was bound, by the Act of Parliament and by the terms of his appointment, to account for every fee received by him to the treasurer of the corporation. Three-quarters of a year had gone over, and the defendant had not accounted for any fees at all, though he was bound to do so every quarter.

Mr. GORDON said he must object to these remarks by the learned counsel.

Mr. ELLIOTT: What is it you object to?

Mr. GORDON: I object to Mr. Metcalfe going into this case as if he were appearing for the borough of Kingston, and making out a case of fraud.

Mr. ELLIOTT: He is appearing for the Metropolitan Board of Works, and he has to show in what way the right of the board arises.

Mr. GORDON: But he has no right under this summons to attempt to establish a case of fraud. I have a full answer to his remarks.

Mr. METCALFE said in that case it would be quite enough to do so at the proper time. The Metropolitan Board of Works were the protectors of the gas-meters within their jurisdiction, and not only so, but they had incurred considerable expense in erecting suitable buildings for testing such meters, and in the appointment of four inspectors for the purpose of carrying out the provisions of the Act. The only mode by which they could meet those expenses and pay the salaries of their officers, was by the fees received for stamping meters. They had, therefore, a direct interest in this matter, not only as the protectors of the public, but as the proper parties to receive the fees for testing meters within their jurisdiction. Mr. Thomas Glover was the person whose meters had been chiefly stamped by Mr. Taunton. Why there should be this connexion between Mr. Glover and the inspector of the Kingston district he could not say, although perhaps he might be permitted to guess. There did not appear to be any reason why Mr. Glover, who was a large maker of meters, should sanction the removal of Mr. Taunton from Kingston to Camberwell, in preference to taking his meters to the duly-appointed inspector of the district. Still, he must have his reason for so doing. It might be that smaller fees were charged by Mr. Taunton, or that Mr. Glover found he could get his meters more readily stamped. The reason could only be guessed at, but he (Mr. Metcalfe) was simply performing a public duty on behalf of the Metropolitan Board, in asking the magistrate whether the course adopted by the defendant was not an offence under the Act of Parliament referred to. The spirit of that Act was that no maker of meters should have power to select his own inspector and take all his meters to him to be tested, but that the inspector should be a public officer having judicial functions to perform between the meter-maker and the consumer of gas. That being clearly the meaning of the Act, it was highly important that the Act should be put into execution in this way, and that the Kingston inspector should confine himself to the district where he was under the eyes and control of the magistrates who appointed him, and that he should not travel into a district where no control could be exercised over him as to accounting for fees and seeing whether the meters were properly stamped by him or not. He was sure the magistrate would agree with him that the remarks made by the gentleman who appeared for the defendant were quite out of place, and that the Metropolitan Board of Works were taking a very lenient course towards the defendant and to Mr. Glover, in simply summoning the former for misconduct in the performance of his duty, whereby he rendered himself liable to a penalty not exceeding £5, and the latter for fixing improperly stamped meters, when they might, as he thought, in the face of these proceedings, have taken the much more severe course of charging them with direct fraud and conspiracy in contravention of the Act. He (Mr. Metcalfe) proposed to give evidence in support of the minor offence, and should ask the magistrate to say that these proceedings were in contravention of the Act. Mr. Taunton had been summoned after distinct warnings given to him, for a gentleman had called upon him and told him he was acting in defiance of the Statute, and his reply was that he had a perfect right to act as he was acting and should continue to do so. Under these circumstances, the board now asked the decision of the magistrate. It would be better, perhaps, in this first instance, to put in the appointment of Mr. Taunton by the Kingston Corporation.

Mr. GORDON said it might save time if he admitted the fact of the appointment.

Mr. METCALFE: This is the memorandum of agreement [producing a document].

Mr. GORDON: No doubt of it.

Mr. METCALFE: The magistrate will see by it that there is a distinct condition that Taunton should take the place mentioned there, within the borough of Kingston, and should not change to any other place, except subject to the sanction of the corporation.

Mr. ELLIOTT: The corporation have no power to appoint except within the borough.

Mr. METCALFE: No doubt. Almost the first section of the Act provides for that. The third section, speaking of the gasholders, says they are to have a distinct mark upon them. Those belonging to the corporation of Kingston have the Kingston mark upon them.

Mr. *Edward Cresy*, examined by Mr. METCALFE.

I am engaged in the clerk's department of the Metropolitan Board of Works, and have had confided to me the working of this Act within the metropolitan district, subject to the control of the board.

Mr. METCALFE: I will just call your attention to another Statute vesting this district in the Metropolitan Board.

Mr. GORDON: I admit that at once.

Examination continued: I am an engineer by profession. In consequence of a complaint made to or information received by the board, I went to Mr. Taunton's place in Lothian Road, Camberwell. There was no name up nor any sign of any kind. My visit was about six weeks or two months ago. I saw Mr. Taunton there, and had a conversation with him. I told him the purport of my visit, and the information we had received. He said it was perfectly true; that he was stamping meters there, and that he had been doing so for some little time; that he was using the Kingston stamp, and was acting under his appointment at Kingston; that he believed he was perfectly justified in so doing; that he believed there was no section of the Act against such testing, nor any penalty attached to such an offence. He said also that the meters he principally stamped were those made by Mr. Thomas Glover and Mr. George Glover; he conceived he had a right to test other meters, but as a matter of fact he was not doing so, nor did he think he should do so. He said he thought there was nothing to prevent him from testing any meters that were brought to him, and that he should continue to do as he was doing. He said the reason of his coming from Kingston was that he found it too expensive to carry the meters backwards and forwards, and that if they were sent by rail they suffered in transit. That is a summary of our conversation. He went over the same ground again and again, repeating the same thing in various

forms; but that is the substance of what took place. There is an inspector appointed by the Metropolitan Board for the southern district of London, in which Camberwell is situated. Mr. Dethridge is the inspector of that district. The board have also erected a building for the purpose of testing meters in that district. They pay the inspectors £200 a year each. The fees for stamping meters are regulated by Act of Parliament, and are paid over to the board weekly by the inspectors. They go to the credit of the account for carrying out the provisions of the Statute. Those expenses are very heavy indeed. The office of the inspector for the southern district of the metropolis is two miles nearer to Mr. Thomas Glover's than the defendant's place in Lothian Road. There is a separate brand for each district; the gasholders also that are used in testing meters have their distinct stamp on them. The stamps for the metropolitan districts are only issued to the Board of Works.

Cross-examined by Mr. GORDON: I did not point out to Mr. Taunton any particular clause in the Act which prohibited his stamping these meters.

Mr. GORDON: Is there any such clause? Can you point it out to me?

Mr. ELLIOTT: The inspector is only appointed for a particular district. It is for you to point the clause out.

Mr. GORDON: I think I shall be able to point out that there is nothing to prevent the defendant carrying on his business in the place where you found him.

Witness: I think there is; but I am an engineer, not a lawyer.

Mr. GORDON: Did Mr. Taunton tell you he had been in the habit of stamping meters for the large company, the Phœnix?

Witness: No.

Mr. GORDON: Did he tell you that he continued to stamp meters for the borough of Kingston?

Witness: No; our conversation had reference only to this subject.

Mr. METCALFE: I do not know whether you have looked at the agreement. He is to be in a particular district, and not to leave without sanction.

Mr. GORDON: He had sanction for all he has done.

Mr. *Geo. Dethridge*, examined by Mr. METCALFE.

I am the inspector appointed by the Board of Works for the southern district of the metropolis. I live at 22, Arundel Square, Islington. The southern district embraces the whole area of the south side of the Thames within the jurisdiction of the board. On Saturday, the 23rd of December, I visited the defendant's place in the Lothian Road. I saw no notification on the outside of it being a testing office for meters. I saw two men, carpenters, engaged there in laying down an iron tramway for the van to run upon up to the place which was evidently the room for receiving meters. I went into the place and inquired for Mr. Taunton. I was told he had gone to Mr. Glover's, on Clerkenwell Green, with a load of meters. I said I would wait till he returned. I subsequently went back to the place, and not finding any one there nor any bell to ring, I opened the gate which led into the receiving-room. I found there a number of meters of both the Glovers make, of various sizes, including one for 200 lights. There were about a dozen wet meters; about thirty or forty altogether. I called out, but no one answering, I opened another door and passed out into the yard behind, where I saw a small shed evidently used as a testing-room.

Mr. GORDON: To save time I will admit the testing of meters at that place.

Mr. ELLIOTT: You admit the testing of meters to be used in the metropolitan district?

Mr. GORDON: Yes, or other places.

Mr. METCALFE: But one part I am coming to may be important. (To witness:) Did you see there two 10-feet gasholders?

Witness: Yes.

Mr. METCALFE (to Mr. Gordon): Will you admit that those are all he has?

Mr. GORDON: That I do not know.

Mr. METCALFE (to witness): You saw those two holders?

Witness: Two gasholders, or models as they are called in the Act.

Mr. METCALFE: Would it be possible with those two gasholders properly to test a 200-light gas-meter?

Witness: Certainly not. The Act requires that all meters tested should have the quantity passed through them stamped on the capacity badge attached to them. Now a meter for 200 lights would require 1800 cubic feet of gas to pass through it per hour, and with two holders it is impossible it could be done. In fact the Act is not complied with.

Mr. METCALFE: The 200-light meter could not be properly tested with the holders you found there?

Witness: No. We have had at our office 11 or 13 holders issued to us, and for testing a meter of that capacity we are obliged to use the whole of them at once.

Examination continued: My office is about two miles nearer to Mr. Glover's place of business than the Lothian Road. When I was at the defendant's place a female came to me and asked what I was doing there. I inquired for Mr. Taunton and she said he was not at home. I then left, and as I was going out I saw a van driven up, filled with meters of Mr. Thomas Glover's make, and all of them unstamped. When it stopped at the door of this place the meters were taken from the van into the receiving-room. On the side of the van was painted, "Frederic Taunton, Camberwell, Surrey." A number of meters bearing the Kingston stamp are constantly coming under my notice. Since March last to the present time, almost daily, I have had meters with the stamp No. 45, which is the Kingston stamp, pass through my office.

Cross-examined by Mr. GORDON: I saw about a dozen wet meters at the defendant's place. They were repairs, and had come from George Glover's. I know that because he is doing that kind of meter now. I cannot say whose make the whole of the 40 meters I saw were; the great majority of them were George Glover's.

Mr. *George Porter*, examined by Mr. METCALFE.

I am clerk to Mr. Walter Wilkinson, the town-clerk of Kingston-on-Thames. I believe that six gasholders were issued to the corporation of that borough, but I am not sure We have not any entry of them, but there is a schedule to the agreement with Mr. Taunton, which I believe specifies the number.

Mr. METCALFE: The number there specified would be all that the corporation have sanctioned?

Witness: That is all.

Mr. METCALFE [handing the agreement to Mr. Dethridge]: If you look at this schedule you can tell whether with the instruments there specified a 200-light meter could be properly tested?

Mr. DETHRIDGE: It is impossible.

Witness: This was the number to be given up on his retirement from office, I believe.

Mr. GORDON: He supplied other things.

Mr. METCALFE: Can you tell me whether any fees have been accounted for?

Witness: They have been accounted for occasionally, and paid into the hands of the treasurer of the borough.

Mr. METCALFE: Up to what time?

Witness: They were paid up to May last, I believe.

Mr. METCALFE: Then there are two quarters in arrear at least.

Mr. GORDON (to witness): Do you keep the books that you have just referred to?

Witness: The treasurer keeps the books.

Mr. METCALFE: I referred to the agreement.

Mr. GORDON: But you put a question with reference to certain accounts. I need not say that the account-book should have been produced.

Mr. METCALFE: You ought to have that. Mr. Taunton is bound to keep the books.

Mr. GORDON: He has always accounted, and is ready to account. (To witness:) Perhaps you can answer this—Do you have anything to do with keeping the accounts?

Witness: The treasurer keeps the accounts.

Mr. GORDON: Then you will hardly be able to answer the question whether Mr. Taunton always accounted when called upon to do so?

Witness: I believe so.

Mr. METCALFE: It is provided in the Act that he should account to the treasurer quarterly.

Mr. ELLIOTT: Every quarter he is bound to pay over the fees received, which has nothing to do with the accounts.

Mr. GORDON: He always did so.

Mr. ELLIOTT: There are three quarters due.

Mr. GORDON: But that question does not arise here.

Mr. ELLIOTT: Still it is a very proper question for the borough of Kingston to ask.

Mr. METCALFE: The corporation agreed to pay him a salary equal in amount to the said fees, so that he had a direct interest in increasing the number of fees. I am now going to call a gentleman to prove that a large number of meters were taken to the defendant's place in December.

Mr. GORDON: I think we may admit that.

Mr. METCALFE: There are a number of days mentioned in the summons—if that is admitted, I will not trouble you any further.

Mr. ELLIOTT: How many times are complained of?

Mr. METCALFE: The 20th, 21st, 22nd, and 23rd of December. That will probably be enough for the purpose. Persons were set to watch with the express object of ascertaining the facts.

The CLERK: The 23rd only is mentioned in the summons.

This was the case for the prosecution.

Mr. GORDON, in answer to the complaint, said this was a very clever attempt on the part of the Board of Works to obtain by a side wind the object they had failed to accomplish in a more important form—viz., by an application to the House of Commons for a bill, the print of which he held in his hands, to amend the Act 22 & 23 Vict. upon a point in which it was deficient, and had always been felt by the board to be deficient—viz., the prevention of the testing of meters by inspectors out of the jurisdiction of the district to which they were originally appointed. He would hand this bill up to the bench, in order that the magistrate might see that it was promoted for the accomplishment of the express object which the learned counsel was now seeking by this summons to obtain. He submitted that this was no application by a party who was entitled to come to that court; and as a preliminary objection he urged that the Metropolitan Board of Works had no more right to come that day and ask for an order against Mr. Taunton, or for the infliction of a penalty upon Mr. Taunton or Mr. Glover, than he had. Indeed this was an old quarrel—a long-standing dispute—and now the Board of Works having failed to get an Act of Parliament, were trying to establish a case in the way in which the learned counsel had proceeded. If the worthy magistrate was against him on this preliminary objection as to *locus standi*, he should then have to trouble him to put a construction upon the entire Act, taking into consideration more especially the various clauses dealing with the appointment and the duties of inspectors. If his worship would refer to the 11th section, he would find the words were—"In case any inspector of meters shall stamp any meter without duly testing and finding the same to be correct, or shall refuse, or for three days after being so required under the provisions of this Act neglect, without lawful excuse, to test any meter, or to stamp any meter found to be correct on being so tested."

Mr. ELLIOTT: There is another provision in the clause—"Or shall be guilty of a breach of any duty imposed upon him by this Act, or shall otherwise misconduct himself." There cannot be more general words to meet everything.

Mr. GORDON said he was not dealing so much with that, because of course the Board of Works would proceed under the words, "otherwise misconduct himself." The magistrate would observe that the 4th section gave the power of appointing inspectors to the justices or session of each particular borough or county. This Act was passed before the Board of Works had anything to do with the control of gas-meters. It was passed in the 22 & 23 Vict., and the Act vesting the powers in the Board of Works was not passed till the 23 & 24 Vict.; therefore the magistrate must look at the Act as it stood originally, without reference to the subsequent transfer of the power to the board. And what would he find? Why, that the justices had the power to appoint inspectors for their own immediate localities or districts, which inspectors were liable to them. If they had any fault to find with the inspectors, or if the inspectors were guilty of any act of misconduct, they were responsible to the justices alone, and no justice outside the borough had any more right or power to seek for the infliction of a penalty upon the inspectors than a perfect stranger. Now, the Metropolitan Board of Works had a certain limited power in their own district.

Mr. ELLIOTT: Where is there anything in the Act of Parliament to show that action is to be taken by any particular party?

Mr. GORDON: There is no clause expressly to that effect.

Mr. METCALFE: The case of *Gale v. Middleton* disposed of that point many years ago.

Mr. ELLIOTT: Unless there is a special provision limiting it, any one may go for a penalty.

Mr. GORDON: I submit for your consideration that, inasmuch as the inspector is the servant of the corporation, they are the only persons who can come here and complain of his conduct, and that the Metropolitan Board of Works have no right whatever to summon Mr. Taunton and Mr. Glover here to-day—in fact, that this court has no jurisdiction.

Mr. ELLIOTT: There cannot be a doubt on that point. It is a general Act of Parliament, and unless there is some special provision against it, any one has a perfect right to do so.

Mr. GORDON: It might be so if this were a breach of a public duty. For instance, if the inspector refused to stamp any individual's meters, then that individual, no doubt, could complain; but I think even he would have

to complain, not here, but to the justices who appointed that inspector. This is not the court to come to. I put that as a preliminary objection, and if you are against me on this point, I must proceed. If you look at clause 16 of the Act, you will see it is enacted that "every consumer of gas may purchase and use, for the measurement of the gas supplied to him, any meter duly stamped under the authority of this Act; provided that the gas to be consumed per hour shall not exceed the quantity per hour the meter is intended to measure, so marked on the outside thereof as aforesaid." Now it is utterly impossible to prevent the stamping of meters or the use of meters stamped in one district from being used or stamped in another, and any manufacturer of meters can send his meters where he pleases to be stamped. He can—and in practice he often does—send his meters to a distance and to a variety of places to be tested; wherever, in fact, he finds it convenient, or where he can get them more readily stamped. In some cases, as I shall prove, meters have been sent from London as far as Edinburgh, Glasgow, Liverpool, and other places to be tested; and the magistrate will see, by examining the Act, that the intention of the Legislature was not to limit the inspectors to the particular district for which they were originally appointed. The Act was considered deficient in this respect, as will be seen by the print of the bill which I have handed up, by which bill it was sought to amend that Act. The bill, however, was lost, on this very ground, that it was regarded as likely to be injurious to the public interests to have such a restriction applied; and because it was considered requisite to leave it optional, and not confine the inspectors to any particular limit, as is done in the Act for regulating weights and measures. I shall have to refer you to another clause in this Act, which was framed to meet the case of districts where no meters are made, or where no inspector has been appointed. I think it is the 17th or 18th section, which provides that an entire county may be constituted one district.

Mr. ELLIOTT: There is an express provision in the 4th section for appointing districts. I do not understand your argument.

Mr. GORDON: My argument is, that the magistrates or justices may appoint a party for one town or borough, or for a dozen or twenty. In the words of the 9th section, they "shall determine and appoint on what days, at what hours, and at what places, each and every inspector shall attend with the said copies of models and stamps in his custody at each of the several towns and districts within their respective jurisdiction, as they shall deem expedient," &c. It would be utterly impossible to confine the stamping of meters to the district which any particular body may choose to appoint an inspector for. There is nothing in the Act to prevent their being stamped elsewhere, and the thing is done every day. Meters are sent to any district to be tested by any inspector whatever, and I say there is nothing in the Act directing that they should be stamped in the district for which the inspector is appointed. I think your worship will find, upon considering the entire scope of the Act, and especially the 4th, 16th, and 18th sections, that it is so.

Mr. ELLIOTT: By the 18th section it is provided that, after twelve months, no meter is to be sold unless it is stamped.

Mr. GORDON: That section also provides that all meters required to be tested and stamped "shall be delivered to the inspector at the place where his testing gasholder and apparatus may be kept. In this case, these are now kept, with the consent of the Kingston authorities, at Mr. Taunton's place at Camberwell. It is with their concurrence he tests meters there; it is not done behind their backs; they are wholly cognizant of it.

Mr. METCALFE: You will have to prove that.

Mr. GORDON: I will. I will ask Mr. Taunton on his oath.

Mr. METCALFE: You cannot do that.

Mr. GORDON: I beg your pardon; on a summons I apprehend that I can. Then, sir, there being no negative or restrictive clauses in the Act, I say that Mr. Taunton, having the permission of the authorities of Kingston, established his testing place, with the necessary gasholders, &c., at Camberwell. He goes down to Kingston, and brings up from there any meters which require to be stamped in that locality, and takes them back again when they are tested. I have really yet to be shown that there is a clause in the Act which prevents his stamping any other meters which may be brought to him. I have already referred to clause 16, and I refer to it again, because it shows that it is impossible to restrict the use of meters stamped any where or by any one.

Mr. ELLIOTT: That does not carry you further, because it says "duly stamped," which means a stamping authorized by the Act.

Mr. GORDON: If stamped by any inspector, they are duly stamped.

Mr. ELLIOTT: It does not say so.

Mr. GORDON: The object of the Legislature was to protect the gas companies from fraud and robbery, and to protect the consumer from the liability of being called on to pay more than he ought. For that purpose, inspectors are appointed to test and stamp the meters, and those inspectors, whether appointed in London or Kingston, have power to test any meters taken to them. There is nothing to prevent a person using a meter here which was stamped in Liverpool, or *vice versâ*, nor is there anything in the Act which says that the inspector residing here or at Kingston may not stamp any meter which it suits the convenience of persons residing elsewhere to take to him. The latter part of the 9th clause evidently creates a kind of roving commission, for it says the justices shall determine and appoint on what days, at what hours, and what places each and every inspector shall attend.

Mr. ELLIOTT: "Within their respective jurisdiction."

Mr. GORDON: I beg your pardon, sir; it does not say anything about their jurisdiction.

Mr. ELLIOTT: They cannot appoint an inspector out of their jurisdiction.

Mr. GORDON: Then, supposing they cannot appoint a place beyond their jurisdiction, still, if they do not object to their inspector stamping meters out of their jurisdiction, there is nothing in the Act which prevents his doing so, even if they do not appoint the place. As you see, a whole county may be included in one district, and then the inspector would have to travel from place to place to stamp the meters brought to him. In this case I say that Mr. Taunton having come a few miles away from the locality of Kingston is still acting as inspector for that borough, and he has a perfect right to stamp any meters taken to him. I have again to draw your attention to the fact that it was evidently thought the Act was defective in this respect; but the bill brought in to amend it was opposed, on the ground that the restriction would work prejudicially to the public convenience.

Mr. ELLIOTT: The bill may have been thrown out because it was found unnecessary.

Mr. METCALFE: It was not promoted by the board at all; it was brought in by the Home Office, and it was opposed because it was found not to be necessary.

Mr. GORDON: I think I can give evidence to show why it was thrown out if you think it worth while to go into it. I do not know whether it will be necessary to go into the case which has been incidentally raised about the fees; there is no question between Mr. Taunton and the borough on that point. It is a question raised by these gentlemen in London who are the inspectors of the board and who find their fees somewhat diminished. There is no doubt about that; I cannot deny it. They say, "We ought to have all these meters to stamp, and you have no right to take them." Mr. Taunton says, "I consider that I am justified by the Act and am empowered by my authorities, and therefore till it is shown that I am wrong I shall go on stamping them." If it is necessary I will put Mr. Glover in the box, and he will prove that it is the practice to send meters considerable distances to have them tested. One reason for doing so is that there is such a quantity of work to be done in the metropolis that the meters cannot be stamped in time, and to avoid delay they are obliged to be sent away for the purpose. Mr. Glover has found that Mr. Taunton is so very accurate in his testings that he prefers to send his meters to him. There is no ground whatever for the suggestion thrown out by the learned counsel that there is some secret reason for his doing so. I at once repudiate the suggestion. The simple fact is that Mr. Taunton affords Mr. Glover greater convenience by fetching his meters and taking them back, and also tests them so accurately that it is an advantage to him to let him have them. I can prove also that the Phœnix Gas Company and other parties have had their meters tested by him so far back as in 1862; and I can give evidence that meters are often sent great distances to be stamped, thus showing that this is no novelty and no attempt to evade the law, but merely the exercise of a right which every trader possesses of adopting that plan which is most useful and beneficial to himself. It is not to be permitted for a moment that because one or two individuals think themselves aggrieved and lose a certain amount of interest, or because the Board of Works think they have jurisdiction, that parties are to be brought here and charges made against them, which in this instance at first seemed to assume a rather serious aspect.

Mr. *Thos. Glover*, examined by Mr. GORDON.

I am a gas-meter maker, carrying on business in Suffolk Street, Clerkenwell. I manufacture meters rather largely.

Mr. GORDON: Perhaps, without my asking a number of questions, you would state to the bench what course you have adopted at different times with regard to testing the meters you manufacture—whether you have not sometimes sent them to Glasgow, Edinburgh, and other places?

Witness: A great many places. There are some gas companies who prefer to have them tested at particular places, and they are sent unstamped to those places and tested by the inspectors there. My reason for sending meters to Mr Taunton is that they are carried away and brought back by him; whereas if they are stamped in other offices, I have to employ my carts to do that. Another thing is this: the Act prescribes the limit of accuracy, which is 2 per cent. and 3 per cent.; now, it is of great consequence, as showing the character and quality of the meter, that a very small per centage of error is allowed, and Mr. Taunton tests my meters within 1 per cent. each way. I could not get the other inspectors to do the same. I reckon it a great advantage, and I ascribe a great deal of my trade to the accuracy of my meters. I have sent large numbers down to Kingston to be tested. There is nothing in the Act to prevent my doing so. I have sometimes sent them to Glasgow, to Edinburgh, to Liverpool, Manchester, and Leeds.

Mr. GORDON: You saw the print of the bill I put before the bench. Had you anything to do with it?

Witness: I had to do with the exposing of the impossibility that such a bill could ever become an Act of Parliament; and I had it from Sir John Thwaites himself that it was promoted by the board. The bill was opposed most vigorously; and though it was introduced with the sanction of the Government, it was thrown out, being found perfectly impracticable. Sir George Grey was waited upon by a deputation, and I was one of the parties that attended.

Cross-examined by Mr. METCALFE: I began to send meters to Mr. Taunton when he first went to Kingston. I had had experience of him when he was inspector for the City of London, years before. He was the first inspector appointed by any authority. The inspectors appointed by the Board of Works frequently test my meters. Many gas companies test their meters after they have passed the inspector. Mr. Dethridge's office is about two miles nearer to me than Mr. Taunton's. There is no arrangement between Mr. Taunton and me about the fees. The year before last I paid him about £590, and last year it would not be much short of that amount. I think it is more this year, but I have not made up the account. My business is increasing, because the meters are so well tested. I pay the fees by cheque, and can prove every farthing. I bank at the principal establishment of the Union Bank of London, in Princes Street. I do not get any thing at all paid back to me by Mr. Taunton. He does not get more than the Act prescribes, and off that he has to deduct the expense of his horse and cart.

Mr. GORDON: There is one remark I should wish to address to the magistrate, and that is, that the City of London has its own inspector, notwithstanding it is within the metropolitan district, and that inspector is entirely independent of the Board of Works, acting as he thinks fit with regard to any meters sent to him to be stamped. In that case the Metropolitan Board have no jurisdiction, although the inspector is actually within their district.

Mr. METCALFE: Is that your case?

Mr. GORDON: Yes, I think it is. I must leave it to the magistrate to say whether he would like any of the authorities of Kingston to attend to prove their consent.

Mr. METCALFE: We have their minute-book here. There is no memorandum of the kind. The agreement requires the corporation to consent, and there is only one way in which a corporation can consent.

Mr. ELLIOTT: No doubt the point raised in this case is a very important one. Nothing, of course, can be more important to the public than that the meters which they use should be properly inspected, and the Act of Parliament has laid down certain provisions by which the public are to be protected in this respect. For this purpose it directs that persons shall be appointed throughout England as inspectors, who are to have certain districts within which they are to test and stamp meters with a particular stamp, so that they may be known and identified by any person using them by this local stamp. It is quite clear that no person so appointed as an inspector has any authority to act out of his district. The justices of Kingston have no power to appoint a person as inspector in any other part of the county. The other justices of the county may divide the remainder of it into districts and appoint certain inspectors therein, who will have to account for the fees they receive to the authorities by whom they were so appointed, and the inspector appointed for Kingston has no right to appropriate the fees taken in any other district. I cannot conceive that any

doubt should arise upon this Act of Parliament. The whole policy of the Act is based upon the formation of districts, and the persons appointed to those districts can have no authority to act elsewhere. Without saying anything about motives, it is exceedingly suspicious that a person should go out of his district and carry on his operations in another district to which an inspector has already been appointed to perform this duty. It is not a creditable mode of proceeding, at all events, and it is quite clear the defendant has been acting without authority beyond his jurisdiction, for which he is liable to the penalty of £5 now imposed upon him.

Mr. GORDON: I may say with regard to the fees that the number of meters is very small in Kingston, that the defendant has acted with the knowledge of the authorities there, and has accounted for the fees received by him.

Mr. METCALFE: That may be a matter of further inquiry.

Mr. ELLIOTT: It may be as you say, but it is quite clear the authorities of Kingston have no power to appoint out of their jurisdiction.

Mr. GORDON: Perhaps you might think it right to adjourn the case.

Mr. ELLIOTT: It is not necessary. I am only saying it may be as you say.

Mr. METCALFE: With regard to Mr. Glover, all we want is that this practice should be put a stop to, and after the opinion expressed by the magistrate, perhaps it would be better to let that summons stand over.

Mr. ELLIOTT: It is most important that the responsible parties who are duly authorized should test these meters, and not any person who may go into the district.

Mr. GORDON: Your decision is that the borough of Kingston had no right to appoint a person to act here?

Mr. ELLIOTT: Quite so.

Mr. GORDON: And though he acts with their authority it is illegal? We will now take the case of Mr. Glover.

Mr. ELLIOTT: I understand that the only object of that summons is to put a stop to the irregularity. If this gentleman will undertake to have his meters properly stamped in future, they do not wish to press it further.

Mr. GLOVER: The summons is in error. I am only summoned for fixing meters; now, I do not fix, I only manufacture. I do not know where my meters are used. I sell them to any one who will pay me money for them.

Mr. GORDON: I do not know whether it may not be considered advisable, from what my clients say, to take the matter to a higher court.

Mr. ELLIOTT: That you can do under the Act.

Mr. METCALFE: Do I understand Mr. Glover to give an undertaking?

Mr. GLOVER: No; I will give no undertaking.

Mr. METCALFE: Then perhaps the summons had better be adjourned.

Mr. ELLIOTT: I do not know what the other summons is for.

Mr. METCALFE: It is for dealing with these things, and causing them to be fixed.

Mr. ELLIOTT: If not properly stamped, it amounts to nothing. He simply sells them to the gas companies. Before they can be used, they must be stamped by the proper inspector. It is all a nullity what he does.

Mr. METCALFE: He represents them as properly stamped. If he will not consent to give me an undertaking, we must proceed.

Mr. GORDON: It will simply be to have the magistrate's construction of the word "fixing" in the Act.

Mr. ELLIOTT: And that must have more consideration than I can give to-day.

Mr. METCALFE: We shall have to give a great deal of evidence.

After some further conversation, the hearing of the summons against Mr. Glover was adjourned for a week.

TUESDAY, JAN. 16.

METROPOLITAN BOARD OF WORKS *v.* THOMAS GLOVER.

This was a summons taken out against Mr. Thomas Glover, of Clerkenwell, under the 18th section of the Sale of Gas Act, 1859, for unlawfully fixing a gas-meter not duly stamped by a properly authorized inspector.

Mr. METCALFE appeared for the board; the defendant conducted his own case.

Mr. METCALFE said this summons was taken out under the 18th section of the same Act which the magistrate had to consider when the case of Taunton was before him in the previous week. The charge then was that a person duly appointed as the inspector of gas-meters for one district had removed his testing apparatus into another district, and used it, beyond the jurisdiction of the justices by whom he was appointed. On that occasion, Mr. Thomas Glover, the present defendant, was put into the box, and he admitted that he had sent meters to be stamped by Taunton at the place established by him within the jurisdiction of the Metropolitan Board. He also stated that he had paid to Taunton about £500 or £600 a year as fees for stamping his meters. The charge now brought against Mr. Glover was for fixing or causing to be fixed for use a meter which had not been duly stamped within the provisions of this Act. The part of the clause in question was to this effect: "Every person who, after the expiration of such twelve months (after the passing of the Act), shall fix for use any such meter before it has been so stamped, shall be liable to a penalty of £5 for every such unstamped meter." The case which he (Mr. Metcalfe) proposed, on the part of the Board of Works, to make against Mr. Glover was this, that according to his own admission he had sent meters to be stamped in an illegal way, the magistrate having already decided that meters stamped by Mr. Taunton at Camberwell were illegally stamped. Therefore, although Mr. Glover had not actually fixed such meters with his own hands, it would be shown that he had sold meters stamped in this illegal way by Taunton as duly stamped meters, knowing that they were so sold for the purpose of being fixed for use. Mr. Glover was therefore the guilty party in the transaction, he having procured those meters to be stamped for that purpose.

Mr. ELLIOTT: There is nothing in the Act which requires the seller to stamp the meters he sells.

Mr. METCALFE: Not at all; but if he does stamp them and represents that they are duly stamped, I apprehend he is to be regarded as the principal who causes the meter to be fixed in this way.

Mr. ELLIOTT: The gas company, or the persons who use the meters, are the parties to get them stamped.

Mr. METCALFE: I shall show that gas companies have bought these meters of Mr. Glover, who represented that they were stamped, he knowing at the time that they were purchased with the object of being fixed for use. I shall produce invoices made out by Mr Glover, in which they are represented as stamped meters, and I shall suggest to you that this is a case which comes under the ordinary rule of law, that where a person employs an innocent agent to do an unlawful thing, he must be taken to be responsible for the acts of that agent. Mr. Glover employs a person to stamp these meters for the purpose of their being fixed and used, and he is the guilty party, because the gas companies take these meters of him, which appear upon the face of them to have been duly stamped.

Mr. ELLIOTT: How does he know where the meter is going to be used?

Mr. METCALFE: I shall show that, in many cases, he has sold them for the purpose of being used.

Mr. ELLIOTT: But the person who uses it must get it properly stamped before putting it up.

Mr. METCALFE: It is upon the face of it a properly stamped meter. It may, for aught he can tell, have been stamped in the proper district, as it bears the Kingston stamp. The purchaser may fix it up innocently, whereas the stamp has been improperly affixed. Mr. Glover, therefore, must be taken to be the person who causes it to be fixed, as he sold it as a properly stamped meter. It is an ordinary rule of law that if a man causes an illegal thing to be done by an innocent agent he is to be regarded as the guilty party. The gas company who actually fix these meters cannot be held responsible, for they are not aware that they are improperly stamped. And, indeed, they do not fix the meters themselves, but employ persons to do it, so that unless we get to the person who possesses the guilty knowledge, we cannot get to any one. The person who actually commits, or procures or causes to be committed, an illegal act, is the person responsible. It is not necessary that he should be the actual perpetrator of the act; it is not necessary that he should be present at the time; it is not necessary that the act should be perpetrated with his own hand; for though he does it through an innocent agent, he is himself the guilty party in the first degree. The person who fixes these meters is an innocent agent, as Mr. Glover, by his representations, leads him to believe they are duly stamped.

Mr. ELLIOTT: Would it not appear upon the face of it whether it was duly stamped or not? If I am going to fix up a meter, I am bound to see that I am supplied with a properly stamped meter. If the meter produced to me bears the stamp of Kingston, I see at once that it is not properly stamped.

Mr. METCALFE: Supposing Mr. Glover lived in the Kingston district, he would have a perfect right to have it stamped there and to send it out with that mark on it.

Mr. ELLIOTT: He is not bound to have it stamped at all.

Mr. METCALFE: But if he sells it, representing it as duly stamped, he is responsible.

Mr. ELLIOTT: There is no such provision in the Act.

Mr. METCALFE: No; but still you cannot say that the innocent person who fixes such a meter is responsible.

Mr. ELLIOTT: He is not innocent.

Mr. METCALFE: Then there is that provision which was alluded to the other day—that a meter, if once duly stamped, may be used out of the district.

Mr. ELLIOTT: Clause 16—"Every consumer of gas may purchase and use for the measurement of the gas supplied to him any meter duly stamped under the authority of this Act."

Mr. METCALFE: Clause 10 is—"No meter duly stamped under the authority of this Act shall be liable to be restamped, although the same be used in any other place than that at which the same was originally stamped, but shall be considered as a legal meter throughout the united kingdom, unless found to be incorrect within the meaning of this Act."

Mr. ELLIOTT: The argument on that was that a meter once properly stamped and fixed up in one district, there was no objection to its being afterwards fixed in another.

Mr. METCALFE: Supposing it were once properly stamped in the Kingston district, it might be used anywhere. A person seeing the Kingston mark upon it would take for granted that it was properly stamped, and this section gives the power to use that meter in any place. The party fixing it for use would be the innocent agent, and you must get at the person who had the guilty knowledge, otherwise the Act goes for nothing. Who first puts this thing in motion? He is the person responsible, as in the old case of *Shepherd and Scott*, in which it was held that the person throwing a squib was responsible for the ultimate consequences of that act. In this case Mr. Taunton and Mr. Glover put this fictitious stamp into operation, and must be held responsible for so doing, and it matters not who actually fixes up the meters for use. Mr. Glover sells them with the representation that they are properly stamped for the purpose of being fixed knowing that they are improperly stamped, and thus induces an innocent agent to do an illegal act; therefore he is responsible. That is the question involved here, and I have no doubt the evidence will substantiate what I have stated. It is an important matter, and the gas companies, among them the Phœnix, which was alluded to the other day, feel themselves very much aggrieved by the course which has been pursued. As many as 600 of these meters have been lately sold to the Phœnix Company, and a great number to the Imperial and other companies, who now see that they are liable to a charge of fraud at the instance of their customers.

Mr. ELLIOTT: Their course is to get the meters stamped before they are put up.

Mr. METCALFE: They may say they are already properly stamped, seeing the Kingston mark upon them.

Mr. ELLIOTT: They cannot. If they are going to use them for the parish of Lambeth they are not properly stamped for the purpose of this Act.

Mr. METCALFE: "No meter duly stamped under the authority of this Act shall be liable to be re-stamped, although the same be used in any other place than that at which the same was originally stamped"

Mr. ELLIOTT: That only applies to a case where a person having had his meter properly stamped for Kingston wishes to remove it.

Mr. METCALFE: It does not apply to a person, but a meter; so that if these meters which have gone to the Phœnix Company had been properly stamped at Kingston, as represented, they would have been perfectly legal meters. It does not say the meter shall not be fixed, but shall be duly stamped—that is, no meter stamped at Kingston shall be liable to be re-stamped, although the same be used in any other place.

Mr. ELLIOTT: I should say the meaning of the Act is, that a meter stamped at Kingston must not be put up and used in Lambeth until it has been tested by the inspector of this district.

Mr. METCALFE: Surely this section (10th) makes it a legal meter throughout the kingdom till it is found to be incorrect. Supposing Taunton had been at Kingston when stamping it, it would have been duly stamped under the authority of this Act, and would not require re-stamping, although it be used in other places—if sent out to be used in Lambeth or in Scotland. If that be not so, I cannot conceive that the Phœnix Company, or any persons occupying their position, would take these meters at all—unless that be the construction of the Act, that when once stamped they shall be considered as duly stamped wherever they are used. It all turns upon that, because if it is not so the person who fixes them will not be considered an innocent agent.

Mr. ELLIOTT said he thought the evidence had better be gone into.

The following witnesses were then called:—

Mr. *Thomas J. Barnes*, examined by Mr. METCALFE.

I am clerk to the Phœnix Gas Company. I produce from their office invoices of meters supplied by Mr. Glover from the 1st of July to the 18th of December, 1865.

Mr. METCALFE: What numbers have been supplied by him during that time?

Mr. GLOVER: If it will save the time of the court, I will admit it.

Witness: There are several descriptions of meters, distinguished by the number of lights.

Mr. METCALFE: We need not go into that; the total number will be sufficient.

Witness: There were 498.

Examination continued: They were all bought as stamped meters. In the invoices there is an extra charge made for the stamping. Those of them that have been used by the company have been used as properly stamped meters. I do not know the Kingston stamp; I simply speak of the numerical stamp that was on them. I believe the Kingston stamp is No. 45, but I cannot speak positively about it. As far as I am aware the company believed that these meters had been stamped legally.

Mr. ELLIOTT: They supposed they were stamped to be used within the district of Lambeth.

Witness: I believe they were taken to be stamped for use according to the requirements of the Act.

Mr. ELLIOTT: Nothing else?

Witness: I cannot say anything more than that.

Mr. METCALFE: If they had known they were improperly stamped would they have passed them on?

Witness: We should not have taken them, certainly, nor paid the fees for stamping.

Mr. GLOVER: Are you aware of your own knowledge whether I have ever fixed a gas-meter?

Witness: I cannot speak to that at all.

Mr. *George Dethridge*, examined by Mr. METCALFE.

I am the meter inspector of the southern district of the metropolis, which includes Lothian Road, where Mr. Taunton carries on his operations. I have seen some of the meters spoken to by the last witness. I went to the works of the Phœnix Gas Company and saw some meters there. Among them I traced No. 254,416, No. 255,183, and No. 254,307—all of them 5-light meters. Each of them was stamped No. 45, and bore the seal of the corporation of Kingston. They bore also the maker's badge, "Thomas Glover," and the capacity badge required by Act of Parliament. I then saw the secretary of the company and told him that these meters were illegally stamped, and he allowed me to compare the numbers with the invoices sent in by Mr. Glover. He afterwards furnished me with a list, and I marked them on there. I found invoices for these particular numbers. The secretary observed to me that the company had no wish to issue illegally stamped meters; that they believed they were properly stamped, and that they were certainly sold to them as properly stamped meters.

Mr. ELLIOTT: There is no obligation upon the seller to have his meters stamped.

Witness: No, he is not compelled to do it. He may sell meters to the gas companies unstamped, and the companies may get them stamped, but the practice is, for the saving of trouble on the part of the gas companies, to have them sent by the maker to be stamped.

Mr. ELLIOTT: Do they put them up without being stamped?

Witness: No.

Mr. ELLIOTT: But supposing they get a meter which is not properly stamped—for instance, one that is to be used within the district where the Phœnix Company supply gas?

Witness: I apprehend the companies have been somewhat lax in their proceedings in this respect. They have seen a stamp upon the meter and they have not looked to see whether it is proper or not. Probably they have taken the assurance of the maker that it is a properly stamped meter which has been sold to them.

Mr. METCALFE: They are the innocent agents. (To witness:) There is an extra charge made by the makers for the stamping of the meters?

Witness: I observed at the bottom of the invoices that there was an extra charge for stamping.

Mr. GLOVER: Are you aware of my ever having fixed a meter?

Witness: No, not of my knowledge; but that is not a question I have gone into.

Mr. METCALFE: You have been also to the Imperial Company?

Witness: I have been to the Imperial. I find many thousands of these meters in existence illegally and improperly stamped.

Mr. METCALFE: What other companies?

Witness: I have been to the South Metropolitan and to the Surrey Consumers Companies. I have also sent to many other gas companies, and I find the thing very general.

Mr. METCALFE: Altogether many thousands of meters are actually fixed?

Witness: Yes.

Mr. GLOVER: Allow me to ask if you know whether the meters with the No. 45 stamp were stamped at the Lothian Road or at Kingston? Have you any knowledge of that?

Witness: I have no knowledge of that myself, but we shall prove that in another way.

Mr. *William Dobson*, examined by Mr. METCALFE.

I am assistant to Mr. Dethridge. I have been down to the Armoury Company's works at Bermondsey. I saw there a 150-light meter fixed, No. 267,409. It bore the No. 45 stamp and the seal of the corporation of Kingston, also Mr. Glover's badge.

Mr. METCALFE called for Mr. Taunton, who had been summoned to attend.

The SUMMONING OFFICER said, when the summons was taken down on the previous evening to Lothian Road, it was stated that Taunton was out of town. The summons was left next door by his direction. It was not said when he was expected back.

Mr. DETHRIDGE: We have evidence that he was in town last night, and was also in town this morning.

Mr. GLOVER: I saw him this morning. He said he had been to Kingston all night. He had not got the summons, and he told me he would not be here to-day.

Mr. *James Watson*, examined by Mr. METCALFE.

I live at Kingston, and am the engineer of the Kingston Gas Company. I know the office that was opened by Mr. Taunton in that town. No other place has been opened in Kingston since that.

Mr. METCALFE: Have any meters been tested at Kingston during the last six months?

Witness: There have during the last six months, but not during the last four months, to the best of my belief.

Mr. METCALFE: Have you endeavoured to get meters stamped there during that time?

Witness: The place is close shut up. I have had no occasion to get meters stamped.

Mr. METCALFE: Do you know of any other persons who have tried?

Witness: I cannot say that I do.

Mr. *Henry Finlay*, examined by Mr. METCALFE.

I am engineer to the Surrey Consumers Gas Company, Rotherhithe. I have frequently given orders to the defendant for meters, and have received meters from him. The last order I gave him was for a 150-light meter for the London Armoury Company. It was sent for us to that company direct by him, and is the one spoken of by the witness Dobson, No. 267,409. It was sent for the purpose of being fixed. My men fixed it and it is at work.

Mr. METCALFE: Was that bought as a stamped meter?

Witness: To tell you the truth, I never asked the question. I have always been led to believe the meters were stamped. I have not got the invoice with me. We are always charged for stamping, and therefore I always looked upon these as stamped meters.

Mr. METCALFE: I suppose if you had known it was not properly stamped, you would not have paid for it?

Witness: Certainly not, because we could have ordered meters elsewhere. This one is stamped—the only question is, whether the stamp is legal.

Mr. METCALFE: You pay Mr. Glover for stamping?

Witness: We do.

Mr. METCALFE: And take his representation as to its being stamped?

Witness: I do not know that he ever represented it so, or that the question was ever raised. It is charged for clearly. I have not looked at the invoices, but it is a rule always to charge additional for stamping the meters.

Mr. ELLIOTT: If it had not been stamped, you would have had it stamped?

Witness: Certainly. The meter-makers always stamp their meters. The only meters the companies get stamped are the repaired meters.

Mr. METCALFE: I suppose you are aware that if you fixed them unstamped it would be illegal?

Witness: Certainly. I send all my meters to be stamped. I have a number of repairers at work, and I send my meters to Mr. Dethridge to stamp.

Mr. METCALFE: Did you fix this meter at the London Armoury Company's as a stamped meter on the faith of Mr. Glover?

Witness: Certainly.

Mr. GLOVER: Will you explain what you mean by fixing a meter?

Witness: Attaching the metal inlet and outlet pipes.

Mr. GLOVER: You never knew me fix a meter?

Witness: Certainly not. You are a maker of meters. The companies fix them, or their servants.

Mr. METCALFE: I think that will be sufficient, Mr. Taunton not being here to-day, and considering the admissions Mr. Glover has made.

Mr. GLOVER, in his defence, said: I am brought here, sir, on this summons, and the words recited in it are, for fixing meters for use. I have failed to hear one single witness prove that I ever fixed a meter, stamped or unstamped. It is a custom in the trade, and I have a foreign as well as a home trade, to sell meters both stamped and unstamped. In the case of the corporations of Manchester and Salford, all the meters go down unstamped, and they have them stamped down there after undergoing the carriage, so as to be more sure that they are in working order. The facts with regard to the selling to these companies are all admitted by me and that they were charged for as proved; but I submit to your worship that the Board of Works have failed to prove that I have ever fixed a meter according to the terms of this summons.

Mr. ELLIOTT: I have no doubt that under this Act of Parliament, though certainly it is not very clearly expressed what the exact intention was, but upon the best consideration I have been able to give, as I said on the former occasion, I have no doubt that a meter to be used in any district must be properly authenticated by the inspector of the district within which it is intended to be used. The charge upon the present occasion is against a person who sells a meter which purports upon the face of it to have been stamped by the person who is the inspector for the district of Kingston. The charge against the seller of the meter is that he sold such a meter for the purpose of being used elsewhere. That is the charge against him; but the words of the Act of Parliament are—"No meter for the purpose of ascertaining the quantity of gas sold shall be fixed for use after the expiration of twelve months after the passing of this Act unless the same shall be stamped by an inspector of meters under the provisions of this Act." Therefore it appears to me that the provisions of this Act of Parliament require the person who fixes, that is who uses it, to see it properly authenticated before using it, by the inspector of the district where it is to be used. The seller has nothing to do with the stamping of it. The act of Mr. Glover, as far as I understand it, is nothing at all. He may think it gives authenticity to have an improper stamp put upon it, but it is the duty of the party who uses it—that is, the gas company—to see before they use it that the meter has been properly stamped, which is what they have not done. It only shows what an exceedingly lax mode is adopted by them, and what little protection the public have from this Act of Parliament, for one gentleman said: "I never looked at it; I presumed it was all right;" whereas it is the duty of the persons who supply the gas to see that the meter is properly tested before they put it up and fix it, because it appears that in practice the gas companies are the persons who really put up the meters and use them. I cannot say that I see anything in this Act of Parliament which imposes a penalty upon the seller for selling a meter improperly stamped any more than for selling a meter which is not stamped at all. I cannot see that I can say he must be taken to be a party to an illegal act. I cannot say but that possibly he might think these meters were to be used at Kingston. I do not know that he did, and there is no positive proof that he was in any way a party to the fixing for use of an improperly stamped meter. The learned gentleman who appears in this case said this is a most important question; and though, as far as I can understand it, the interpretation I have put upon the Act of Parliament is the correct one, yet, if he wishes to have the opinion of a higher court upon it, I shall be happy to give him a case.

Mr. METCALFE: I think it would be advisable, with deference to your

opinion, for it is a matter of public importance, and it is desirable we should know against whom proceedings should be taken.

Mr. ELLIOTT: It appears that a very loose practice exists, and it should be known what really is the duty of the party who fixes the meter—that wherever a meter is fixed for use it is to be tested by the district inspector before it is put up.

Mr. METCALFE: One reason why it is desirable to have the opinion of a superior court is, that if your interpretation is correct, it is difficult to say who is the party who fixes it. We cannot say that the gentleman now in the box (Mr. Finlay) ought to be summoned for fixing a meter in this way, therefore it is highly desirable that the point should be decided by a superior court, if only for the purpose of getting the Act properly at work.

Mr. ELLIOTT: Whether the superior court may be of opinion that the Act is very defective and requires amending, or whether they will say that the seller of the meters is liable under this Act of Parliament.

Mr. METCALFE: It is very desirable. In the meantime, I throw out this caution to Mr. Glover, who said last time that he should continue to do as he has done, that if he sells any more meters in this way, representing them to be stamped meters, a summons will be taken out against him for obtaining money by false pretences.

Mr. GLOVER: Excuse me; I did not say so. I must correct the learned gentleman. I did not say I would continue to do so; I merely said I would give no undertaking. If I find that the magistrate's ruling is the law, all these meters stamped out of the district will be restamped at my expense, for I have been paid for them.

Mr. ELLIOTT: It may not have been wrongfully intended, but it is a very suspicious thing that a gentleman should be brought from Kingston to test these meters. At the same time, I do not say that any fraud was intended, for I have no evidence of that; but it is a very improper practice, and, as it appears to me, it is one which ought at once to be put an end to. I have no doubt it will be. If you wish it, I will draw up a case in such a form as to obtain the opinion of the court.

Mr. GLOVER: I believe Mr. Taunton has instructed his solicitor to write to the board, wishing to have the opinion of a superior court.

Mr. ELLIOTT: His case is disposed of.

The summons was then dismissed.

RESEARCHES ON THE VOLATILE HYDROCARBONS.

By C. M. WARREN.

[From the *Memoirs of the American Academy* and *Silliman's Journal*.]

(*Concluded from page* 19.)

Of the calculated Boiling-points of Hydrocarbons by Schröder's Theory.

The subjoined tables exhibit the theoretical boiling-points of the above-mentioned hydrocarbons, (*a*) as calculated according to Schröder's last theory, in comparison with the boiling-points actually found. By this theory, as already stated, each double atom of carbon (C_2) contained in a body is supposed to influence the boiling-point by 30°, and each double atom of hydrogen (H_2) to influence the same—10°; from the sum of these influences the number 70° is in all cases to be deducted, in order to find the boiling-point.

1. *Hydrocarbons from Pennsylvania Petroleum.*

1ST SERIES.

Formula.	Determined Boiling-point.	Calculated Boiling-point by Schröder's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
C_8H_{10}	0·0 (?)	0	
$C_{10}H_{12}$	30·2	20	10·2
$C_{12}H_{14}$	61·3	40	21·3
$C_{14}H_{16}$	90·4	60	30·4
$C_{16}H_{18}$	119·5	80	39·5
$C_{18}H_{20}$	150·8	100	50·8

2ND SERIES.

Formula. (?)	Determined Boiling-point.	Calculated Boiling-point by Schröder's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
C_8H_{10}	8–9	0	8–9
$C_{10}H_{12}$	37·0	20	17·0
$C_{12}H_{14}$	68·5	40	28·5
$C_{14}H_{16}$	98·1	60	38·1
$C_{16}H_{18}$	127·6	80	47·6

3RD SERIES. (Not completed.)

Formula.	Determined Boiling-point.	Calculated Boiling-point by Schröder's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
$C_{20}H_{20}$	174·9	130	44·9
$C_{22}H_{22}$	195·8	150	45·8
$C_{24}H_{24}$	216·2	170	46·2

2. *Hydrocarbons from Coal-Tar Naphtha.*

Name of Substance.	Formula.	Determined Boiling-point.	Calculated Boiling-point by Schröder's Theory.	Difference between calculated and determined Boiling-point.
		°	°	°
Benzole	$C_{12}H_6$	80·0	80	0·0
Toluole	$C_{14}H_8$	110·3	100	10·3
Xylole	$C_{16}H_{10}$	139·8	120	19·8
Isocumole	$C_{18}H_{12}$	169·9	140	29·8

3. *The Homologous Hydrocarbons from Oil of Cumin and Cuminic Acid.*

Name of Substance.	Formula.	Determined Boiling-point.	Calculated Boiling-point by Schröder's Theory.	Difference between calculated and determined Boiling-point.
		°	°	°
Cumole	$C_{18}H_{12}$	151·1	140	11·1
Cymole	$C_{20}H_{14}$	179·6	160	19·6

(*a*) To avoid useless repetition, the hydrocarbons from Albert coal oil will be omitted in this series of tables, they being considered identical with the corresponding bodies from petroleum.

It appears, therefore, that the theory of Schröder finds no support from any one of the different series of hydrocarbons presented in these tables. The discrepancy between the observed and calculated boiling-points, as shown, varies from about 10° to 50° C. This discrepancy is found to increase pretty uniformly by about 10° as we rise from one member to the next higher in the ascending series. In the series of the formula $C_n H_n$, however, the discrepancy is nearly a constant one—viz., about 46°. I would not overlook the fact, that the calculated boiling-point of benzole is absolutely identical with that found by experiment; nor the remarkable coincidence, that the agreement is almost perfect between the probable boiling-point, and that obtained by calculation, for the body of the probable formula $C_8 H_{10}$ in the 1st series from petroleum. It is obvious, however, that these are merely accidental circumstances, to which no importance can attach.

Of the Calculated Boiling-points of Hydrocarbons by Löwig's Theory—viz., that One Atom of Carbon (C) raises the Boiling-point 38°·4, and One Atom of Hydrogen (H) lowers it 29°·2.

Hydrocarbons from Pennsylvania Petroleum.

1ST SERIES.

Formula.	Determined Boiling-point.	Calculated Boiling-point by Löwig's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
C_8H_{10}	0·0 (?)	15·2	
$C_{10}H_{12}$	30·2	33·6	3·4
$C_{12}H_{14}$	61·3	52·0	9·3
$C_{14}H_{16}$	90·4	70·4	20·0
$C_{16}H_{18}$	119·5	88·8	30·7
$C_{18}H_{20}$	150·8	107·2	43·6

2ND SERIES.

Formula. (?)	Determined Boiling-point.	Calculated Boiling-point by Löwig's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
C_8H_{10}	8–9	15·2	6·7
$C_{10}H_{12}$	37·0	33·6	3·4
$C_{12}H_{14}$	68·5	52·0	16·5
$C_{14}H_{16}$	98·1	70·4	27·7
$C_{16}H_{18}$	127·6	88·8	38·8

3RD SERIES. (Not yet completed.)

Formula.	Determined Boiling-point.	Calculated Boiling-point by Löwig's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
$C_{20}H_{20}$	174·9	184·0	10·9
$C_{22}H_{22}$	195·8	202·4	6·6
$C_{24}H_{24}$	216·2	220·8	4·6

A cursory examination of the last three tables will suffice to show that, so far as regards the hydrocarbons of the formulæ $C_n H_n$ and $C_n H_{n+2}$, the theory of Löwig also has no foundation in fact. That his theory did not hold good with the hydrocarbons of the formula $C_n H_{n-6}$ was observed by Löwig himself, who found that it would place the boiling-point of benzole at 285°·6—*i.e*, 205° above its actual boiling-point.

Of the Calculated Boiling-points of Hydrocarbons by Gerhardt's Theory.

We come finally to test the law of Gerhardt, above mentioned. Inasmuch as this law was especially designed to apply exclusively to the hydrocarbons—upon the observed boiling-points of some of which it was indeed founded—we should naturally expect to find this more in accordance with facts than either the hypothesis of Schröder or that of Löwig, both of which claimed to be of more general application, and were framed more especially with reference to other classes of substances. The facts presented in the following tables will show, however, that this is far from being the case; and that the theory of Gerhardt, as well as those of Schröder and Löwig, so far as these relate to the hydrocarbons, was by no means legitimately drawn from nature, but is altogether artificial.

1. *Hydrocarbons from Pennsylvania Petroleum.*

1ST SERIES.

Formula.	Determined Boiling-point.	Calculated Boiling-point by Gerhardt's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
C_8H_{10}	0·0 (?)	–8·0	
$C_{10}H_{12}$	30·2	12·5	17·5
$C_{12}H_{14}$	61·3	33·0	28·3
$C_{14}H_{16}$	90·4	53·5	36·9
$C_{16}H_{18}$	119·5	74·0	45·5
$C_{18}H_{10}$	150·8	94·5	56·3

2ND SERIES.

Formula. (?)	Determined Boiling-point.	Calculated Boiling-point by Gerhardt's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
C_8H_{10}	8–9	–8	16·5
$C_{10}H_{12}$	37·0	12·5	24·5
$C_{12}H_{14}$	68·5	33·0	35·5
$C_{14}H_{16}$	98·1	53·5	44·6
$C_{16}H_{18}$	127·6	74·0	53·6

3RD SERIES.

Formula.	Determined Boiling-point	Calculated Boiling-point by Gerhardt's Theory.	Difference between calculated and determined Boiling-point.
	°	°	°
$C_{20}H_{20}$	174·9	130·0	44·9
$C_{22}H_{22}$	195·8	150·5	45·3
$C_{24}H_{24}$	216·2	171·0	45·2

2. *Hydrocarbons from Coal-Tar Naphtha.*

Name of Substance.	Formula.	Determined Boiling-point. °	Calculated Boiling-point by Gerhardt's Theory. °	Difference between observed and calculated Boiling-point. °
Benzole	$C_{12}H_6$	80·0	93·0	13·0
Toluole	$C_{14}H_8$	110·3	113·5	3·5
Xylole	$C_{16}H_{10}$	139·8	134·0	6·0
Isocumole	$C_{18}H_{12}$	169·9	155·5	15·5

3. *Hydrocarbons from Oil of Cumin and Cuminic Acid.*

Name of Substance.	Formula.	Determined Boiling-point. °	Calculated Boiling-point by Gerhardt's Theory. °	Difference between observed and calculated Boiling-point. °
Cumole	$C_{18}H_{12}$	151·1	154·5	+3·4
Cymole	$C_{20}H_{14}$	179·6	175·0	−4·6
Cumo-oil of turpentine	$C_{20}H_{16}$	155·4	160·0	+4·6

The chief conclusions deduced from the foregoing facts and considerations may be briefly summed up as follows:—

1. That the boiling-point difference for the addition of $C_2 H_2$ in homologous series of hydrocarbons is generally 30° C., which is a much larger difference than has been commonly supposed.

2. That of the five series of hydrocarbons examined, only one series was found exceptional to the rule just stated, and this presented the boiling-point difference of about 20°, which is but little larger than the number 19°, which Kopp found so common with other classes of substances.

3. That certain series of derivatives from the benzole series of hydrocarbons present boiling-point differences corresponding to the elementary difference of $C_2 H_2$, considerably smaller than the number 19° of Kopp.

4. That the formulæ of Schröder, Löwig, and Gerhardt, for the calculation of boiling-points, so far as these may be supposed to relate to the hydrocarbons, are incorrect and purely artificial.

5. That the custom of taking boiling-points with the bulb of the thermometer in the vapour is more liable to lead to an erroneous determination, at least in certain cases, than if the bulb be placed in the liquid.

DR. HILLIER'S REPORT ON THE GAS SUPPLIED BY THE IMPERIAL COMPANY TO THE VESTRY OF ST. PANCRAS DURING THE MONTH OF DECEMBER, 1865:—

Maximum light estimated by sperm candles according to the Act	14·6
Minimum light—sperm candles	12·2
Average light—sperm candles	13·36
Traces of ammonia, indicated by turmeric test-paper	Usually.
Traces of sulphuretted hydrogen, indicated by lead test-paper	None.

The illuminating power of the gas was not so good as in the month of November. It never fell, however, below the parliamentary standard for the minimum. Ammonia was present in excess, as usual. There was no indication of sulphuretted hydrogen. There was present in 100 cubic feet of gas nearly 14 grains of sulphur, the Act prescribing that the quantity shall not exceed 20 grains.

DR. WHITMORE'S REPORT ON THE QUALITY OF THE GAS SUPPLIED IN ST. MARYLEBONE, IN DECEMBER, 1865:—

December.	Illuminating Power in Sperm Candles. *Mean of 23 Observations.	Illuminating Power in Sperm Candles. Highest.	Illuminating Power in Sperm Candles. Lowest.	Mean Pressure in 10ths of an inch. Highest.	Mean Pressure in 10ths of an inch. Lowest.
Imperial Company's gas	14·64	16·16	13·65	22·6	8·7
Chartered Co.'s common gas	12·71	15·30	11·56	35·0	13·3
Chartered Co.'s cannel gas	21·67	24·25	20·10	32·6	11·8

* Each observation consists of 10 readings of the photometer.

The illuminating power of the Imperial Company's gas has continued excellent throughout the month: 7 times it exceeded the light of 15 sperm candles, and on 14 other occasions it was over 14 candles, whilst at its lowest it was—as will be seen by the table—more than a candle and a half above the legal standard. The common gas of the Chartered Company has, on three occasions during the Christmas week, been below the standard. The cannel gas has given a mean intensity of light equal to 21¼ candles, and on no occasion has it fallen short of what the law requires. The pressure of all the gases has frequently been very unsteady. As regards their purity, sulphuretted hydrogen has, on no occasion, been detected in either of them, but ammonia has invariably been present. In both the gases of the Chartered Company sulphur has been slightly in excess. It should be stated that the above results are obtained from the gas manufactured by the Imperial Company at their works at Fulham, and from the common and cannel gas of the Chartered Company, manufactured at their works in the Horseferry Road.

DR. WHITMORE'S REPORT ON THE QUALITY OF THE WATER SUPPLIED IN ST. MARYLEBONE, IN DECEMBER, 1865:—

December.	Total Solid Matter in degrees or grains per Imperial gallon. Dec., 1864. 0°	Total Solid Matter in degrees or grains per Imperial gallon. Dec., 1865. 0°	* Loss by Incineration of Solid Matter in previous column. Dec., 1864. 0°	* Loss by Incineration of Solid Matter in previous column. Dec., 1865. 0°	Ammonia. 0°
Distilled Water	....	....	....	....	....
West Middlesex water	....	21·04	....	1·17	....
Grand Junction water	....	21·28	....	1·49	....
Pump in Marylebone Lane	....	66·88	....	3·60	·632
Pump in Wigmore Street	....	37·28	....	2·68	·348

* The loss by incineration of the solid matter represents the amount in degrees or grains of organic and other volatile matters which were driven off.

WATER SUPPLY OF THE METROPOLIS.—In 1850, the gross daily quantity of water supplied by the water companies of London was 44,383,332 gallons daily. In 1856, it had reached upwards of 81 million gallons per day, having nearly doubled in the short space of six years; and now, in 1865, it is about 108 million gallons. This is about 30 gallons per head per day on the present population.

CHARGE OF STEALING GAS.—At the Bucks Petty Sessions, on Saturday, the 6th inst., Mr. George Willis Harley, a stonemason and builder at Slough, and a member of the local board, was charged with stealing 5000 cubic feet of gas, the property of the Slough Gas Company. Mr. Darvill, of Windsor, conducted the prosecution, and Mr. Haynes, of Wandsworth, appeared for the defence. The evidence of Mr. Hetherington, jun., the company's inspector, was to the effect that when the defendant's meter was examined at Lady-day, 1865, it was found to register correctly, the consumption for the previous quarter having been 10,200 cubic feet. At Midsummer it was found that the meter had registered only 500 cubic feet as the quarter's consumption, at Michaelmas it registered a consumption of 100 cubic feet, and at Christmas the index stood exactly the same as at the last inspection. Further evidence was given to show that in consequence of this irregularity the meter was taken down and examined, the result being the discovery that a piece of solder had been fastened to the float-wire to prevent the descent of the valve upon the abstraction of water from the meter, and that the inside arm of the syphon or entrance-pipe had been cut shorter than the front arm. As the meter, which was a 5-light one, contained only a quart of water when removed, it was alleged that the defendant could not have obtained a supply of gas at all (although evidence was adduced to show that he had had a good supply during the time) had not the float been propped up. The case was adjourned to the 17th inst., when Mr. Hetherington, sen., the secretary of the company, deposed as to the result of his examination of the defendant's meter with the test-meter at the works. Further evidence was also given, and the magistrates having intimated their intention to send the case for trial, the defendant's counsel declined to make any answer to the charge. The defendant was thereupon committed to the Aylesbury Assizes, but was admitted to bail in his own recognizances of £200, and two sureties of £100 each.

Share List of Metropolitan Gas Companies.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
5000	10	Anglo-Romano	10 0 0	9 0 0	10 to 12
5000	20	Bahia (Limited)	20 0 0	3 0 0	17 0 0
1000	20	Do., preference	20 0 0	10 0 0	27 10 0
750	20	Do., do., redeem.	10 0 0	10 0 0	12 10 0
30000	5	Bombay (Limited)	5 0 0	£5 intr.	5⅜ to 5⅝
10000	5	Do., third issue	3 0 0	£5 intr.	3⅜ to 3⅝
10000	20	British, Limited (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton (Potteries), Trowbridge, & Holywell.)	20 0 0	10 0 0	29⅜ to 29½
12000	50	*Chartered*	50 0 0	10 0 0	69½ to 70
6000	50	Do.	30 0 0	10 0 0	39 to 40
10000	20	*C. of London*, Ash.	20 0 0	10 0 0	28½ to 29
10000	10	Do., B shares	10 0 0	4 0 0	7 5 0
8000	10	Do., new shares	10 0 0	10 0 0	15 to 15½
35000	25	City of Moscow (L)	7 10 0	£7 intr.	5 to 6
17490	25	Colonial & General *Commercial*	25 0 0	10 0 0	36 to 33¼
5000	20	Continental G. & W.	6 0 0	6 0 0	
2500	20	Continental Union	20 0 0	8 0 0	18 to 19
17500	20	Do.	10 0 0	8 0 0	9¼ to 9½
5827	5	County & Gen. (L)	5 0 0		
2000	5	Do., preference (Pater, Pembroke, Ely, Lea Bridge, Northfleet, Walton, & Ware.)	5 0 0	6 0 0	
5000	10	*Crystal Pal. Dist.*	10 0 0	10 0 0	15½ to 16
10000	10	Do.	1 0 0	7 0 0	1 7 6
5000	10	Do., preference	10 0 0	6 0 0	12½ to 13

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
4000	50	*Equitable*	50 0 0	10 0 0	75½ to 76
4000	25	Do., new shares	25 0 0	10 0 0	37½ to 38
23406	10	European (Lim.)	10 0 0	10 0 0	13 to 13½
12000	10	Do., new shares (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	10 0 0	6½ to 6¾
20000	10	*Great Central Gas Consumers*	10 0 0	10 0 0	13⅜ to 14½
5000	10	Hong Kong (Lim.)	10 0 0		11 to 12½
26000	50	*Imperial*, old sh.	50 0 0	10 0 0	79½ to 80
1300	100	Do., bonds	£100	10 0 0	197 to 198
7000	25	Imperial Austrian	10 0 0		
28000	50	*Impl. Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Stolberg, Toulouse, & Vienna	43 15 0	16 0 0	95½ to 96¼
3000	40	*Independent*	40 0 0	10 0 0	65 to 70
3000	10	Do.	10 0 0	5 0 0	8 to 9
3000	20	Do.	10 0 0	7 10 0	11 to 13
6886	50	*London*	50 0 0	10 0 0	72 to 73
5519	25	Do., 1st pref.	25 0 0	6 0 0	29 to 29¼
568	50	Do., 2nd pref.	50 0 0	6 0 0	
219	50	Do., 3rd pref.	50 0 0	6 0 0	
18781		Do., 1st pref. sh		6 0 0	
11828		Do., 2nd pref. sh		5 0 0	

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
12000	5	Malta & Medit. (L.)	5 0 0	2 10 0	
30000	5	Oriental, Calcutta	5 0 0	8 0 0	5½ to 5⅝
30000	5	Do., new shares	0 10 0	8 0 0	0 12 6
10000	5	Ottoman (Limited)	5 0 0		3¾ to 4
10000	10	Parà (Limited)	10 0 0	£6 intr.	9 to 9½
27000	20	*Phœnix*	20 0 0	10 0 0	29 to 29¼
3600	100	Do., new	15 0 0	7 10 0	18 0 0
144000	Sk.	Do. (capit. profits)		5 0 0	80 0 0
5000	20	*Ratcliff*	20 0 0	10 0 0	30 to 32
	20	Rio de Janeiro (L)	20 0 0	10 0 0	21 to 21½
4138	5	Singapore (Lim.)	5 0 0		
2000	5	Do., preference Shanghai	5 0 0	7 10 0	
4000	50	*Sth. Metropolitan*	50 0 0	10 0 0	80 to 82
15000	10	*Surrey Consumers*	10 0 0	10 0 0	14⅜ to 15
10000	10	Do., new	4 0 0	10 0 0	6⅜ to 7
9000	50	United General (Dublin & Limerick)	50 0 0	4 12 0	29½ to 30
10000	10	*Victoria Docks*			
3000	10	*Wandsworth & Putney*	10 0 0	7 10 0	13¼ to 14
20000	10	Western (Limited) A shares	10 0 0	10 0 0	15⅜ to 15½
10000	10	Do., B shares	5 0 0	10 0 0	8⅜ to 9
10000	10	Do., C shares	3 0 0	10 0 0	5⅜ to 6
20000	10	Do., D shares	1 0 0		1⅜ to 2
8000	5	*West Ham*	5 0 0	7 10 0	6 10 0
6000	5	Do., new shares	3 0 0	7 10 0	3 18 0
551	10	West London Junction (Lim.)	10 0 0	6 0 0	
520	10	Do., preference	10 0 0	6 0 0	

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1½ in.	2 in.	2½ in.	3 in	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb

Retail Prices are 5 to 10 per cent. higher.	London.			Glasgow.			Newcastle			Wales.			Yorkshire, Derbyshire, and Staffordshire.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
Pig Iron, No. 1, G.M.B.	4	5	0	3	7	0	3	2	6	3	10	0	3	15	0
1½ and 2-inch Socket-pipes	7	10	0	6	0	0	6	15	0	6	15	0	7	10	0
2½ and 3-inch ditto	7	0	0	6	0	0	6	5	0	6	10	0	7	0	0
4 and 5-inch ditto	6	10	0	5	10	0	5	15	0	6	0	0	6	10	0
6 inches and upwards ditto	6	5	0	5	0	0	5	10	0	5	15	0	6	5	0
Retorts, 1st fusion, hot blast	6	0	0	—			5	5	0	5	10	0	6	0	0
Ditto, 2nd ditto, cold ditto	7	0	0	5	15	0	5	15	0	6	0	0	7	0	0
Tank-plates, ¼ thick and above	6	10	0	5	10	0	5	10	0	5	15	0	6	5	0

WROUGHT-IRON TUBING,

Subject to 50 per cent. Discount.

	2 in.		1¼ in.		1¼ in.		1 in.		¾ in.		½ in.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Patent Welded Tubes, from 2 to 12 feet—per foot			1	0	0	10	0	7	0	5	0	4½
Ditto ditto, from 6 inches to 18 inches—each	3	0	2	0	1	9	1	3	1	0	0	9
Connecting-pieces, or Long Screws	3	6	2	3	2	0	1	6	1	2	0	11
Bends, Springs, and Elbows (wrought iron)	3	9	2	3	1	9	1	0	0	10	0	8
Tees, wrought or cast	4	0	2	6	2	0	1	6	1	1	0	10
Crosses, ditto	4	6	3	0	2	6	2	0	1	6	1	2
Iron Cocks	17	6	9	6	7	6	4	6	3	3	2	6
Ditto, with brass plug	28	0	16	0	13	0	7	0	5	6	4	6
Diminishing Sockets, Caps, Plugs, and Nipples	1	3	0	9	0	8	0	6	0	5	0	4
Plain Sockets	1	9	0	8	0	7	0	5	0	4	0	3
Syphons, 2-quart	15	0	14	0	13	6	13	0	12	0	—	

GAS COALS.—*Per Ton.*

Newcastle.—Unscreened:—

Burnhope, East Castle, Haswells, Lanchester's Pelaw, Nettlesworth Primrose, and South Pelaw	6s.6d.
Felling, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	6 9
Craghead, Charlaw, Derwent, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Medomsley, Mickley, New Pelaw, New Pelton, Pelaw Main, Ravensworth, South Moor Pelton, South Leverson, Townley Main, Tyne Main, Washington Hutton, West Pelaw, Wearmouth Hutton, and Witton	7 0
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	7 3
Brancepeth, Dean's Primrose, Pelton, South Peareth, Stella, Urpeth, and West Leverson	7 6

Scotch Cannel:—

Boghead (at Leith)	7s 0
Kirkness, best	25 0
Capeldrae, 1st quality	20 0
Ditto, 2nd ditto	12 6
Lesmahago (at Glasgow)	24 6
Ditto (at Granton)	25 6
Arniston	27 6
Wemyss	20 0
Haywood, Wilsontown (at Granton)	18 0
Pirnie	14 0
Lothian's Cannel (free on board at Leith)	25 0
Myles' Cannel	21 0

FREIGHTS.

Coastwise—Newcastle.—Per Ton:—

Chatham and Rochester	6s.6d.
Cork	9s. 6d. to 10 0
Dover, Folkestone, and Ramsgate	7 6
Dublin	10s. to 10 6
Exeter Quay	9s. to 9 6
Ipswich	5 6
London (from Leith)	8 6
London (Pool)	6 6
Lowestoft and Yarmouth	5 0
Portsmouth & Southampton	8s. to 8 6
Plymouth	8s. 6d. to 8 9
Shoreham	7s. 6d. to 8 0
Whitstable	6 9
Weymouth	8s. 9d. to 9 0

Foreign.—Per Keel:—

Barcelona	£22 to 23 0
Bordeaux	14 0
Boulogne and Calais	7 15
Cadiz	16 0
Copenhagen	10 10
Genoa	£23 to 23 10
Hamburg	11 10
Havre de Grace	9 12
Leghorn	£19 to 21 0
Lisbon	£13 10s. to 14 0
Rotterdam	11 6
Stettin	9 0
Trieste	18 0
Venice	23 0

SUNDRIES.

Best Nstle. Fire-bks., p. 1000, £2 10s. to £2	15 0
Cliff's Fire-bks. (at Wortley), p. 1000	2 15 0
Ingham's ditto (at Wortley), p. 1000	2 15 6
Fire-clay Retorts, p. ft. run, 3s. 6d. to	0 7 0
Tough Cake Copper, p. ton	101 0 0
English Pig Lead, p. ton	21 10 0
Welsh Bar Iron (in London), p. ton	7 10 0
Foreign Spelter, p. ton	23 0 0
English Block Tin, p. ton	102 0 0
Banca, p. ton	94 0 0
Tarred Rope Yarn, p. cwt.	1 0 0

Advertisements.

GEORGE GLOVER & CO.'S

IMPROVED DRY GAS-METERS,

STANDARD GASHOLDERS, AND TESTING APPARATUS.

Extensive experience, in this country and abroad, has proved the superiority of their Improved Dry Gas-Meters, which have come more rapidly into general use than any Meter hitherto manufactured.—The printed Report of the official Inspector of Gas-Meters for the City of Manchester, for the year ending 1863, shows that he tested 5707 *new Dry* Gas-Meters, and only 5 *new Wet* Meters; and that *George Glover and Co.'s Improved Dry Gas-Meters stand highest in point of accuracy*, as shown in the following extract:—

CLASSES X. & XXXI.

"George Glover and Co., per centage of error on the number tested, 2·116.

Thomas Glover	,,	,,	,,	2·812.
Croll, Rait, and Co.	,,	,,	,,	5·540.
Thomas Fletcher	,,	,,	,,	15·121.
Joseph Boulton	,,	,,	,,	25·000."

Ranelagh Works, Ranelagh Road (near Pimlico Pier), London, S.W.; and 15, Market Street, Manchester.

TO BE SOLD cheap, a Set of 12-in. CONDENSERS, consisting of 10 pipes, 21 ft. long, with syphon-boxes, &c., complete. Also a set of 12-in. double row of PIPES, 21 ft. long, with syphon-boxes, &c., complete.

For particulars and price apply to J. KELSALL, Manager.

Gas-Works, Ashton-under-Lyne, Jan. 9, 1866.

TO GAS COMPANIES.

THE Advertiser is open to an Engagement as MANAGER of Gas-Works. Has had several years practical experience, as working manager, in the carbonizing of coals and distribution of gas. Understands retort setting (both clay and iron), main and service laying, fitting, taking quarterly indices of meters, and making out gas accounts. Age 37. Married. Salary expected, about £80 per year.

Address, Cs., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO IRONFOUNDERS AND OTHERS.

THE Directors of the Tunbridge Wells Gas Company will be prepared on Monday, the 29th inst., to receive TENDERS, at per yard, for the supply of from 1200 to 1250 yards of 14-in. Cast-Iron SOCKET-PIPES, to be delivered at the Angerstein Wharf Station of the South-Eastern Railway; but should any other station on the same line be preferred by the parties tendering, it must be stated in the tender.

The tender must state the weight of each pipe, the description of iron used in the casting, and the earliest date from receipt of order by which the pipes will be delivered.

Tenders are to be sent to the Office of the Company, Tunbridge Wells, by six o'clock p.m., on Monday, the 29th inst., marked "Tender for Pipes," and addressed to the Secretary, of whom any further particulars may be ascertained.

The Directors reserve to themselves the power to reject any tender.

By order,
JOHN READ, Secretary.

Tunbridge Wells, Jan. 17, 1866

TO GAS COMPANIES.

WANTED, by the Advertiser, a situation as MANAGER, or Manager and Secretary of Gas-Works. Has had practical experience in every department. No objection to go abroad. Satisfactory references.

Address, EDWIN BUNN, 5, Denmark Place, High Wycombe, BUCKS.

WANTED, an Assistant Collector and INSPECTOR. A person thoroughly qualified to act in both capacities. He must devote the whole of his time to the service of the Company. Salary £70 per annum. Security required.

Applicants who have had former experience need only apply, stating former and present engagements, age, &c., enclosing testimonials; to be addressed (in applicant's own handwriting) to the MANAGER, Gas-Works, Swansea, SOUTH WALES.

Dec. 23, 1865.

THE

GAS-METER COMPANY, LIMITED,

(LATE CROLL, RAIT, & CO.,)

Beg to intimate that the printed report of the official inspector of Gas-Meters for the City of Manchester for the year ending **1864** shows the following comparison :—

NEW METERS TESTED.

Of the Gas-Meter Company, Limited . .	Dry . .	1116
	Wet* . .	1292
Total		**2408**
Of George Glover and Co.	Dry	383

* The Unvarying Water-Line Gas-Meter, in regard to which the following extract from said report refers :—"The visiting justices will perceive, from a comparison of the tables now appended with those of last year (viz., 1863), *that there has been a large increase in the number of new wet meters tested, owing to the Gas Committee having substituted the wet for the dry in the case of hired meters.*"

Extract from printed report of the said official inspector for the year ending 1862, shows the following comparison :—

Croll, Rait, and Co., per centage of error on the number tested . . 8·671

George Glover and Co. „ „ „ . . 22·727

THE GENERAL GASFITTING and GAS-WORKS COMPANY continue to supply or erect their general Gasfittings and Gas-Works. Established 1858. Prospectuses and references free.
J. COPCUTT, Engineer,
Park Street, HACKNEY, and AYLESBURY.

SOUTH METROPOLITAN GAS- LIGHT AND COKE COMPANY.
NOTICE is hereby given that an EXTRAORDINARY MEETING of the Proprietors of this Company will be held at the London Tavern, in the City of London, on TUESDAY, the 13th of February next, at three o'clock precisely, to elect an Auditor in the place of the late Mr. G. Coxhead.
Any Proprietor intending to become a candidate, must give notice in writing, at the Office of the Company, at least fourteen days previously to the day of election.
By order,
THOMAS LIVESEY, Secretary.
Old Kent Road, Jan. 20, 1866.

GAS TAR FOR SALE.

THE Directors of the Wigan Gas Company are prepared to receive TENDERS for the purchase of the surplus TAR produced at their works from the 7th of March next, for one or more years, as shall be determined by the directors.
Estimated quantity for sale about 1000 tons per annum.
The party contracting will be required to provide proper casks or other vessels, and to remove the tar from the Company's premises at his own cost, so as to keep the Company's tank clear.
Payment to be made monthly.
The party contracting will also be required to enter into a written contract for the purchase and removal of the tar, a draft of which may be seen at the offices of Mr. Ralph Darlington, Solicitor to the Company, King Street, Wigan; and the contractor will be bound by the terms of the said contract.
Tenders must be sent in on or before the 28th day of February next, addressed to the Gas Company, Wigan, endorsed "Tenders for Tar."
The Directors reserve to themselves the power to reject any tender.
By order, R. DARLINGTON,
Solicitor to the Company.
Gas-Works, Wigan, Jan. 9, 1866.

CAST-IRON Retorts, Socket Pipes, with Syphons and all requisite Connexions, Lamp Columns, Wrought Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails and Coke Barrows, Cross Bars, Fire Pots, Pumps, Iron Borings.
PURIFIERS, CONDENSERS, and SCRUBBERS erected complete, or the materials supplied; with every description of goods in use by Gas-Works, in stock, on wholesale prices, at
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MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.
Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.
Patents procured for Foreign Countries.
Information as to cost, &c., supplied gratuitously upon application to the advertiser, 42, Parliament Street, WESTMINSTER. [Office of the JOURNAL OF GAS [illegible]TING, &c.]

THE

EAST BARNET GAS & WATER COMPANY, LIMITED.

R. WILKINSON, ESQ., CHAIRMAN.

This Company is formed for the purpose of affording a good supply of gas and water to the inhabitants of East Barnet, Herts, and the surrounding neighbourhood. Acting upon a principle of non-interference with existing interests, the Directors have selected for their operations those districts of East Barnet, Chipping Barnet, Totteridge, and adjacent places thereto in the county of Herts; and Enfield, Friern Barnet, Finchley, and adjacent places thereto in the county of Middlesex which are not at present supplied with gas or water by any other proprietary.
The Directors have entered into a contract with the present proprietors for the purchase of the existing gas-works, including the freehold land, dwelling-house, gasholders, and all outbuildings, as the same are now situate near the Barnet Station of the Great Northern Railway. The vendors have agreed to accept 1000 free fully paid-up shares as in payment of a moiety of the purchase, which shares are not to participate in any dividend until the general body of Shareholders shall have received a dividend of £5 per cent. upon their paid-up capital. The purchase also includes the very valuable plant underlying the numerous roads on the British Land Company and other estates.
The Directors are negotiating with the proprietors of the water-works at East Barnet for the purchase of that valuable concern, and they confidently anticipate that they will succeed in acquiring it upon terms at once equitable and advantageous.
In addition to the sale of gas, the Directors have resolved to supply and erect fittings, services, and meters; so that in every department, whilst the public will secure a good article, manufactured and placed under the most experienced management, the Company will in all matters of detail improve the dividend which the Directors confidently depend on realizing for their constituency.
Coke, tar, and all residual products of the manufacture of gas, will also form a staple of the Company's sales.
In the event of the Directors succeeding in purchasing the water-works, as above intimated, the value of the facilities for laying down double mains for gas and water contemporaneously cannot be over-estimated. In this case, wherever gas is required in an unopened district, water can also be laid on, with a considerable saving of labour and cost.
The Directors have secured the valuable services of Samuel Pontifex, Esq., A.I.C.E., as Managing Director. That gentleman's ability and experience are too well known in the neighbourhood of the works to require comment here.
The Directors have issued the necessary notices of their intention to apply to Parliament in the ensuing session for such powers as are required by all companies similar to this in constitution.
Should no allotment be made, all deposits will be returned in full.
The Directors will proceed to allot first list of applicants for shares on the 10th of January, 1866. The next day for allotment will be duly announced.
Applications for shares can be sent either to the Bankers, Messrs. Glyn, Mills, Currie, and Co.; to the Secretary, at the Gas-Works, East Barnet; or to the City Offices of the Company, 61, Cheapside, E.C.
WM. C. HUMPHRYS, Secretary.
The business will be carried on by the Company on and after the 1st of January, 1866.

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CONSULTING PRACTICAL ENGINEER,
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Mr. Panting having had many years experience in designing and manufacturing gas apparatus, is prepared to advise with Companies and others on the laying out of new, and on the extension or improvement of existing gas-works.
Plans, specifications, and estimates furnished.

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THE Crewkerne Gas Company are about to erect new Manager's House, Coal Stores, and Gas-Works capable of supplying 30,000 feet of gas daily; and desire to receive, before February the 18th, Plans, Specifications, and Estimates for such works. They offer a premium of £12 for the plan, specification, and estimate which they may consider desirable to adopt (if any).
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IRONMONGERY, Gasfitting, and WORKING TRADES for disposal, in a busy thoroughfare of London. Healthy and open neighbourhood. Established nearly 100 years, and has a first-rate connexion. A practical, energetic man has cleared a little fortune in nine years.
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Sole Lessees of the Auchinheath Coal-Field, are prepared to ship the above at Glasgow, Greenock, and Ardrossan, on the west coast of Scotland; and at Granton or Leith, in the Firth of Forth, on the east coast. Also to forward them to any railway-station in Scotland or England.
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GAS COAL WORKS,
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GAS-ENGINE COMPANY, LIMITED.

CAPITAL, £100,000, in 5000 Shares of £20 each, of which 4250 are Preference or A Shares, and 750 Deferred or B Shares.

Deposit £1 *per Share; on Allotment* £1. 10*s. and* £2. 10*s. three months after Allotment; after which there will be no further calls without authority of two General Meetings of Shareholders.*

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W. T. ADCOCK, Sunnyside, Worcester.
C. J. ANDREWES, Reading Iron-Works, Reading.
THOMAS G. BARLOW, C.E., 42, Parliament Street, S.W.
F. J. EVANS, Engineer-in-Chief of the Chartered Gas Company, Horseferry Road, Westminster.
EBENEZER GODDARD, C.E., Gas-Works, Ipswich.
GEORGE VIRTUE, Ivy Lane, E.C., Director of the Great Central, Surrey, and other Gas Companies.

SOLICITOR.

J. HENRY JOHNSON, 47, Lincoln's Inn Fields, W.C.

AUDITORS.

Messrs. COLEMAN, TURQUAND, YOUNGS, and CO., 16, Tokenhouse Yard, E.C.

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20, CANNON STREET, E.C.

PROSPECTUS.

This Company is formed for the introduction, into Great Britain and the Colonies, of the Gas-Engine invented and perfected by M. Lenoir, of Paris, and for which patents have been secured in this country.

By means of the inventions of M. Lenoir, motive power is obtained by the admission of a mixture of coal gas and atmospheric air into the cylinder, where it is ignited by means of electricity. The Engine itself is very simple and inexpensive in construction, and its regular working in Paris and the French provinces, during the last four years, has fully demonstrated its great usefulness and its perfect safety. The insurance offices do not increase the ordinary rates of premium where these Engines are in use.

The Gas-Engine is peculiarly applicable for purposes where a small amount of occasional or intermittent power is required, and where the power to be obtained by steam would be objectionable, such as in small manufactories of all kinds in the centre of towns.

The Gas-Engine has now been introduced into upwards of 300 different manufactories, &c., in France, with uniform success, and, although its use in England has not been very extensive at present, it has been adopted in numerous establishments in London; whilst engineers who are well qualified to judge of the field for its use in this kingdom, agree in stating its applications to be almost illimitable. The following extracts from many of a similar character will show the estimation in which the Engine is held by those who have had it in use for some time:—

Having had one of your Engines at work in my printing establishment for the last twelve months, driving two machines, I have great pleasure in bearing testimony to the utility of the same as a motive power.—(W. Smith, Printer, 71, Kennington Lane.)

The specimen of Lenoir's patent Gas-Engine deposited in the Patent Office Museum, of the nominal power of half a horse, has been worked most satisfactorily in the workshop of this establishment for the last five months, during which time it has made no less than 2,762,184 revolutions, without the slightest derangement of any of its working parts. I have taken some indicator cards from the top and bottom of the cylinder, and find that, at 110 revolutions per minute, the power given off is just equal to one horse power. This Engine was sold for half a horse-power, and it indicated a power very considerably above.—(F. P. Smith, Curator, Patent Office Museum.)

We have had for the last month in use one of your Gas-Engines, as the motive power to a Conisbee's Imperial Lithographic Machine, and find it answers exceedingly well. One very great advantage is that the insurance companies with whom we insure—viz., the Manchester Guardian and London and Liverpool—have allowed its use without raising the rate of insurance, which, had we had steam power, would have been more than double.—(Dean and Son, Lithographers, 66, Ludgate Hill.)

I find the working of the Gas-Engine fitted up for me, for turning my printing-machines, in every way satisfactory. The expense incurred for gas and grease is comparatively trifling. I can get easily 1000 copies per hour.—(A. Southey, Printer, 146, Fenchurch Street, E.C.)

I am happy to say that, after having had the Gas-Engine in use for upwards of three months, I have every reason to be perfectly satisfied with it.—(J. Carter, 17, Fleet Street, E.C.)

We have had one of your Engines at work for about six months, and it answers our purpose admirably. It occupies very little space, and is easily managed.—(Ann Eccles, Printer, 101, Fenchurch Street.)

The Gas-Engine being light in construction, occupying but small space, and absolutely free from danger, may be placed upon any floor of a house, and is at the same time almost noiseless. There is no smoke, steam, or other annoyance arising from its use. The cost of construction of these Engines is small, whilst, from their simplicity, no skilled engineer is required for their working.

The French Company, who are the owners of M. Lenoir's patents, have agreed to assign the British patents to this Company, with their future improvements upon them, in consideration of £10,000 in cash and £15,000 in shares, upon which no dividends become payable until the ordinary shareholders have received dividends to the amount of £10 per cent. per annum upon their investment, in addition to which the directors have power to lay aside a large reserve-fund before a division of profits. As the owners of the patents will retain a large interest in this Company, they will naturally afford every assistance in the introduction of the invention, which their experience in France well enables them to do.

The Reading Iron-Works Company, Limited, have made the Engines at work in this country, and have agreed to supply the public demand for them on fair terms.

The directors do not consider that it will be necessary to call up more than £5 per share, unless it shall hereafter be considered advisable that the Company shall establish works for the manufacture of the Engines.

Although the Gas-Engine has been introduced into this country for twelve months only, and no effort has been made to secure its general adoption, yet the sale has regularly increased, and has now reached such a number as, without further increase, it is calculated will give the shareholders fully £10 per cent. per annum on the amount intended to be called up. The directors, however, confidently expect the sale to be quadrupled within the next two years, in which case the profits must obviously be extremely large.

The Engine may be seen at work daily, from eleven to one, and from three to five, at No. 40, Cranbourn Street, Leicester Square; and, by special appointment, the Engines may be seen regularly working at various establishments.

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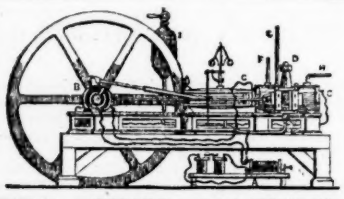

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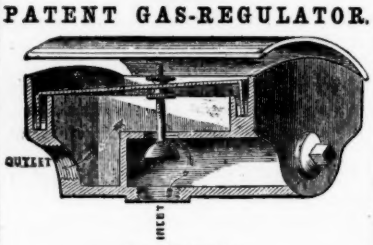

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Its advantages over any other regulator are as follows:—

It is more simple in its construction. More sensitive in its operation. Less liable to get out of repair. It requires no more attention than a gas-meter. And is the cheapest regulator yet made.

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Containing no Lime, and only 45 of Oxides, resist the strongest heats, and will last for Gas-Works longer than any others.
Samples and prices sent, and the highest references given, on application to
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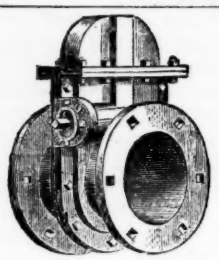

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List of prices, with full dimensions of all sizes up to 36 inches, to be had on application.

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Valves made with Outside Racks to order. Also, Screw Water-Valves with Gun-Metal Faces.

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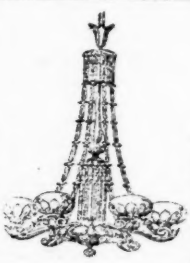

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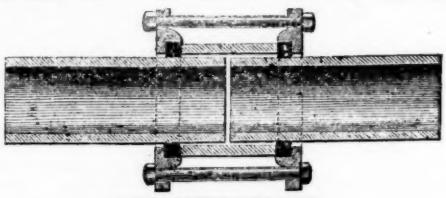

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"To Mr. C. H. Griffiths, "E. HORLICK.
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All sizes, from ¼ in. to 4 in. diameter and upwards.
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WASHERS for GAS and STEAM JOINTS.
VALVES (pure solid Rubber) for STEAM-ENGINES.
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GAUGE GLASS RINGS and WASHERS.
SUCTION and DELIVERY HOSE-PIPES for PUMPS, FIRE-ENGINES, BREWERIES, and FACTORY purposes.
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Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.
Warehouse in London for Cast-iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.
Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

ALFRED PENNY, Gas and
CONSULTING ENGINEER,
WENLOCK IRON WORKS,
21 & 22, WHARF ROAD, CITY ROAD, LONDON.
Mr. PENNY having had a large experience in the construction, alteration, and management of Gas-Works, begs to inform the Directors of Gas Companies that he may be consulted on all matters appertaining thereto. He also manufactures Gasholders, Purifiers, and all the various apparatus used in Gas-Works, and keeps in stock Retorts and Mouthpieces, Socket-Pipes, Bends, Branches, T-pieces, &c. &c.
Plans, Specifications, and Estimates prepared.

BELGIAN CLAY RETORTS.
J. SUGG and CO., late ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.
Communications, addressed to J. SUGG and CO., GHENT, will receive immediate attention.

GLOBE METER-WORKS, OLDHAM.
NEWTON & BRADDOCK,
Manufacturers of
IMPROVED CONSUMERS GAS-METERS,
STATION-METERS, GOVERNORS, GAUGES, &c.
Sole-Manufacturers of their
PATENT COMPENSATING GAS-METER,
This Patent being applicable for the repair of old Meters.
STATION-METERS,
of any size, on the best principle.

CATHELS'S Patent Four-Way Disc GAS-VALVES, applied to Purifiers, Gasholders, or other apparatus, save from ONE-HALF to TWO-THIRDS the number of ordinary Valves and Connexions. They are simple, strong, and durable; and having no ground faces or rubbing surfaces, cannot get set fast however long they may remain unmoved. The direction in which the Gas is passing can also be seen at a glance.
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TO GAS ENGINEERS AND OTHERS
CONNECTED WITH GAS COMPANIES WORKS.
WOOD SIEVES for Gas Purifiers.
BENJAMIN CARPENTER begs to inform the above that he has been supplying most of the principal Gas Companies Works in London, &c., with WOOD PURIFYING SIEVES for the last four years; and, he feels sure, he has given every satisfaction, by the continued favour he has received from gentlemen knowing the benefit derived by their use.
Having, through the introduction of improved machinery, effected a great saving in their manufacture, he is now enabled to offer them at a very Low Price. Being perfectly satisfied of their Superiority over all other descriptions, on account of their Strength, Cheapness, Durability, Non-Liability of Corrosion, and Facility of Cleaning, and having devoted four years to the Perfection of this article, he feels that nothing has been lost sight of in their manufacture which would tend towards Durability and Efficacy.
The Trade supplied, and Orders executed on the shortest notice.
Estimates forwarded on application to
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Wood Sieve Maker for Gas Purifiers,
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FREDERICK RICHARDS,
CONSULTING AND GENERAL ENGINEER,
WILMSLOW, CHESHIRE.
Plans, Specifications, and Estimates made for New or the Alteration of existing Gas-Works.
Gas-Works leased, or Estimates given for the Manufacture of Gas per Contract for a term of years.
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MESSRS. RICHARD EVANS & CO., Haydock Collieries, near St. Helen's, are prepared to SUPPLY their best GAS COAL to Gas Companies on favourable terms.
This Coal is extensively used by some of the largest Gas Companies in the Kingdom.
It produces 9,400 cubic feet of 17-candle power, and yields 13 cwt. of coke per ton.

JAMES NEWTON & SONS,
(Established 1820,)
FIRE-BRICK AND TILE MERCHANTS,
Wholesale and for Exportation,
FALCON DOCK, 78 AND 79, BANKSIDE,
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DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and FIRE-CLAY, and every Article suitable for
GAS AND WATER WORKS.

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MANUFACTURERS AND CONTRACTORS FOR GAS-WORKS
Of any extent at Home and Abroad,
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JOHN STREET, ADELPHI, LONDON, W.C.

JAMES MILNE & SON,
AS ENGINEERS, GAS-METER, GAS APPARATUS, AND GASFITTINGS MANUFACTURERS,
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JAMES OAKES and CO.,
ALFRETON IRON WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water-Works, including Iron Retorts, Socke and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.
N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.
CHARLES HORSLEY, Agent.

FRASER'S PATENT RIBBED CAST-IRON RETORTS are being introduced at the Gas-Works, Derby, Shrewsbury, Portsea, Nottingham, Syston, Whitwick, Barrow-in-Furness, Seaham, Risborough, Leighton, Loughborough, Corwen, Castle Donnington, Kegworth, Royston, Woking, Swadlincote, Rugby, Carlow in Ireland, Stornoway, N.B.; also at Gibraltar and Montreal, &c.
Apply to Mr. A. C. FRASER, Gas-Works, LOUGHBOROUGH.

ECONOMY IN GAS MAKIN .
GREATER BRILLIANCY OF LIGHT,
LESS SMOKE,
AND
NO NAPHTHALINE,
by using
WARNER'S PATENT ANHYDROUS OXIDE OF IRON,
Which, in addition to purifying Gas from all the Sulphuretted Hydrogen and Carbonic Acid, decomposes at the same time the whole of the
AMMONIA,
and a portion of the Bi-sulphide of Carbon.
This is the only material yet discovered which will decompose all the "Ammonia" contained in crude or unwashed Gas.
The Hydrogen liberated through the decomposition of the Ammonia unites with the excess of carbon, and gives an increased yield of Gas of from 10 to 15 per cent., of greater brilliancy of light and with less smoke.
The Oxide can be renovated by simple exposure to the air.
LONDON OFFICES, 17, LAURENCE POUNTNEY LANE.

WARNER'S SILICATE OF IRON PAINT.
This Paint, which is suitable for every description of work, is not affected by Sea Water, or by the Strongest Acids, and, being incorrodible, is much superior to the Oxides of Iron at present in use, they being, in fact, rusts themselves.
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Every description of castings to 40 tons each.
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PATENT WELDED IRON TUBES,
For Gas, Steam, Water, and other purposes.
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High-pressure Water-Valves and Cocks, &c., &c.
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Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

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MANUFACTURERS OF
IRON TANKS, GASHOLDERS,
GAS APPARATUS,
PIPES, VALVES, IRON ROOFS,
WROUGHT AND CAST-IRON GIRDERS.
DESIGNS, SPECIFICATIONS, & ESTIMATES FURNISHED.

NOTICE OF REMOVAL.

THE BUSINESS OF

WILLIAM SUGG,

GAS ENGINEER,
is removed to his New Factory,

VINCENT WORKS, VINCENT STREET,

REGENT STREET, WESTMINSTER.

LIVESEY FIRE-CLAY WORKS,
NEAR BLACKBURN, LANCASHIRE.

ORLANDO BROTHERS,

MANUFACTURER OF PATENT CLAY RETORTS,
AND EVERY DESCRIPTION OF
TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.
FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

Established 1830.

THE MOST PERFECT DRY GAS-METER.

N. DEFRIES'S PATENT,

WITH ROTARY VALVE.
200,000 in use.
For Circulars and Testimonials, apply at the Manufactory,
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FIRE GOODS, and SALT-GLAZED DRAIN-PIPES.
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GEORGE ANDERSON, Gas and Consulting Engineer,

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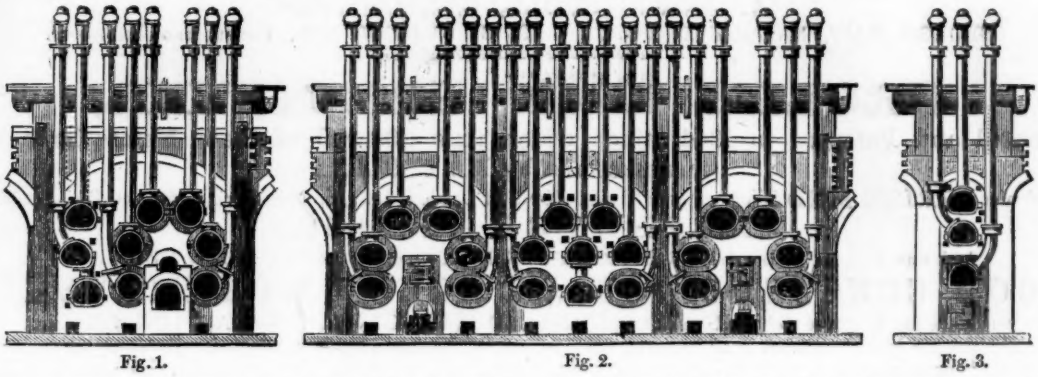

Fig. 1. Fig. 2. Fig. 3.

Fig. 1 represents an arrangement for medium sized works. Either the whole 9 or only 6 of the Retorts may be heated by the alteration of two dampers. Fig. 2. The Retorts in the centre bed are of iron, and receive the modified heat from the beds of Clay Retorts on either side.

In both figs. 1 and 2 all the furnaces, or a portion of them, may be of tar or coke. The tar furnace is adapted to burn *only* tar; and, without smoke or destruction of the Retorts, a tar furnace can be converted to a coke one, or *vice versâ*, without interfering with the Retorts.

Fig. 3 is what I adopt for small works. In it, like fig. 1, 2 or 3 Retorts can be heated by the alteration of two dampers. In each case this very often postpones for weeks, if it does not prevent altogether, the lighting up of an extra fire. These modes of setting can in most cases be adapted to existing arches.

Contracts made for the erection of the Retorts if necessary.

Also my PATENT PISTON EXHAUSTER combined with Steam Engine when required.

Also my PATENT FOUR-WAY VALVES, *one* of which answers the purpose of *three* ordinary Valves when applied to Purifiers, or bye-pass and shut-off to Station-Meters, &c., and obviates the objection of foul gas attendant on the Centre Water-Valve.

Also my CONCENTRIC GAS GOVERNOR, which occupies about half the space of the old-fashioned Governor.

LLOYD AND LLOYD,

ALBION TUBE-WORKS, BIRMINGHAM,

MANUFACTURERS OF

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PLAIN, GALVANIZED, & ENAMELLED, for Gas, Steam, and Water, from ⅛ in. to 6 in. bore.

STOCKS, TAPS, and DIES, GUN METAL GLAND-COCKS, WATER-GAUGES, &c.;

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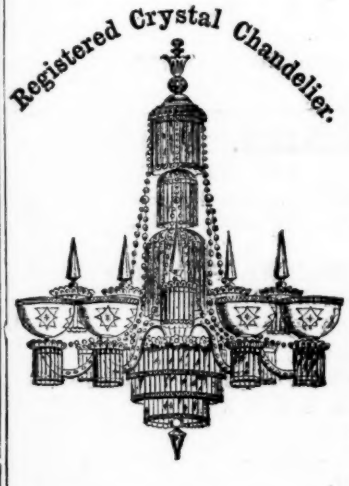

TO GAS COMPANIES AND THE TRADE.

NOTICE OF REMOVAL IN CONSEQUENCE OF THE LATE FIRE.

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Gas Engineers, and Manufacturers of

CRYSTAL, BRONZED, & ORMOLU Chandeliers;

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VESTIBULES, and every description of Gas-Fittings.

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Special Designs prepared in perfect accordance with architectural arrangements. Estimates furnished for the Lighting and Fitting up of Theatres, Music-Halls, and Public or Private Buildings with Gas.

GAS-MOONS of the Newest Designs.

The PATENT GAS-REGULATOR and PURIFIER reduced to **6s. 6d. per dozen.** *Pattern-Books of Gas-Fittings, Crystal and Ormolu Chandeliers for* 1865-66 *are now complete.*

Works: LONDON and BIRMINGHAM.

The CRYSTAL CEILING, with Ventilating Apparatus, manufactured by J. Defries and Sons for the Strand Music-Hall.

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GEORGE RAIT, MANAGING DIRECTOR. T. G. BARLOW, C.E., CONSULTING ENGINEER.

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Obtained **PRIZE MEDALS** at the EXHIBITIONS of London, 1851, of New York, 1853, and Paris, 1855.

IMPROVED in 1858,

And was awarded at the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for

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Of the best material and workmanship, carefully adjusted to meet the requirements of the SALES OF GAS ACT.

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STANDARD TEST GASHOLDERS;

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DOUBLE CONE, ALBERT, SHADOWLESS, & EVERY DESCRIPTION OF BURNER, UNION JETS, BATSWINGS, ETC.;

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CAST & WROUGHT-IRON PIPE BLACK & GALVANIZED. COPPER, TIN, BRASS, & COMPOSITION TUBING.

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Large Pattern Books with every description of Gas-Fittings, Chandeliers, &c., with complete Book of Prices, 12s.

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